Supporting Information

Electrochemical Cobalt-Catalyzed C-H or N-H Oxidation: A Facile Route to Synthesis of Substituted Oxindoles

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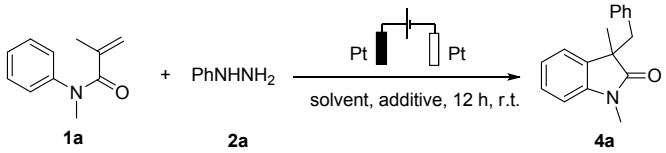
A. General Procedures

All reactions were carried out in undivided electrochemical cells under N_2 atmosphere using pre-dried glassware, if not noted otherwise. Platinum electrodes (10 mm × 15 mm × 0.25 mm, 99.9%) and RVC electrodes (10 mm × 15 mm × 6 mm) were connected using stainless steel adapters. TLC was performed by using commercially prepared 100-400 mesh silica gel plates (GF_{254}) and visualization was effected at 254 nm. All reagents were purchased as reagent grade and used without further purification. Melting points were measured with a micro melting point apparatus. ^1H NMR spectra were recorded at 400 MHz using TMS as an internal standard and ^{13}C NMR spectra at 100 MHz, using $CDCl_3$. The chemical shifts are referenced to signals at 7.26 and 77.0 ppm, respectively. IR spectra were obtained either as potassium bromide pellets or as liquid films between two potassium bromide pellets with an infrared Fourier spectrometer. High-resolution mass spectra (ESI) were obtained with a LCMS-IT-TOF mass spectrometer.

B. General Procedure for the Synthesis of 3 and 5.

In an undivided electrochemical cell, *N*-arylacrylamides **1** (0.3 mmol), phenylhydrazines **2** (0.45 mmol) or potassium alkyltrifluoroborates **3** (0.45 mmol), $Co(OAc)_2$ (10 mol%), NaOPiv (0.6 mmol) was added in EtOH (10 mL) under N_2 atmosphere at room temperature for 12 h. At ambient temperature, electrolysis was started with a constant current of 8.0 mA which was then maintained for 12 h. After the reaction was completed, the mixture was transferred to a flask and the electrodes were rinsed with ethyl acetate. Then, the solvent was evaporated to dryness under reduced pressure and the mixture was passed through a short pad of silica gel using a mixture of ethyl acetate/petroleum ether (5: 1-20: 1) as eluent to afford the target product **4** and **5**.

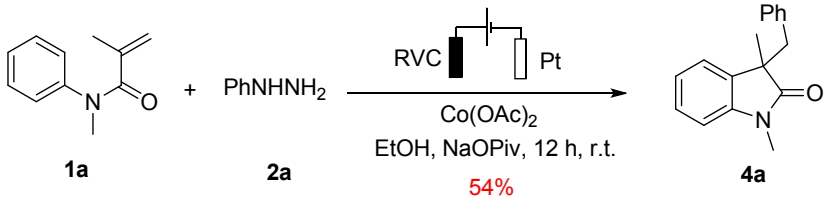
C. Screening of Electron Transfer Mediators



Entry	Metal Salts	Additive	Solvent	Yield [b] (%)
1	$Co(OAc)_2$	NaOAc	EtOH	22
2	CuCl	NaOAc	EtOH	trace
3	$FeCl_2$	NaOAc	EtOH	n. d.
4	$Mn(OAc)_2$	NaOAc	EtOH	n. d.

[a] Reaction conditions: Undivided cell, **1a** (0.3 mmol), **2a** (0.45 mmol), metal salts (10 mol%), additive (0.6 mmol), solvent (10 mL), 8 mA, under N_2 atmosphere at room temperature for 12 h unless otherwise noted. [b] Isolated yield.

D. Gram-Scale Experiment



To validate the potential industrial applications of this strategy, a scale-up experiment was then carried out for *N*-phenylacrylamide (**1a**, 6 mmol, 1.05g) and phenylhydrazine (**2a**, 9 mmol, 0.97g). The reaction afforded 0.81g of the corresponding oxindole **4a** on gram scale, albeit in a diminished yield of 54% as compared with the small-scale experiment.

E. Analytical Data

3-Benzyl-1,3-dimethylindolin-2-one (4a) (known compound) [1-2]**:** Yellow solid (61 mg, 81%), mp 89.1-90.6 °C. IR (KBr): 2925, 1711, 1611, 1485, 1375, 750 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.21-7.10 (m, 2H), 7.04 (dd, J = 10.1, 6.4 Hz, 4H), 6.85 (d, J = 7.6 Hz, 2H), 6.61 (d, J = 7.7 Hz, 1H), 3.15-2.97 (m, 5H), 1.48 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.0, 143.1, 136.1, 133.0, 129.8, 127.7, 127.4, 126.4, 123.3, 122.0, 107.7, 49.9, 44.5, 25.8, 22.7. MS (EI, 70 eV) *m*/*z*: 251.16, 160.13, 91.13.

3-Benzyl-1,3,7-trimethylindolin-2-one (4b) (known compound): Light oil (53 mg, 67%). IR (KBr): 2975, 1764, 1707, 1456, 1243, 1065, 700 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.10-7.02 (m, 3H), 7.00-6.94 (m, 1H), 6.93-6.89 (m, 2H), 6.86-6.81 (m, 2H), 3.26 (s, 3H), 3.04 (dd, J = 49.7, 12.9 Hz, 2H), 2.40 (s, 3H), 1.46 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.7, 140.9, 136.2, 133.6, 131.4, 129.8, 127.4, 126.3, 121.9, 121.1, 119.3, 49.2, 44.8, 29.2, 23.0, 18.8. MS (EI, 70 eV) *m*/*z*: 265.21, 174.16, 91.14.

3-Benzyl-7-fluoro-1,3-dimethylindolin-2-one (4c): Brown oil (37 mg, 46%). IR (KBr): 2989, 1764, 1718, 1242, 1056, 783 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.08 (t, J = 6.1 Hz, 3H), 6.95 (m, 3H), 6.83 (d, J = 6.5 Hz, 2H), 3.19 (d, J = 2.3 Hz, 3H), 3.06 (dd, J = 62.0, 13.0 Hz, 2H), 1.47 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 179.5, 148.7, 146.3, 136.0 (J = 11.8 Hz), 135.8, 129.7, 127.6, 126.6, 122.5 (J = 25.3 Hz), 119.1 (J = 12.3 Hz), 115.7 (J = 76.9 Hz), 50.3, 44.7, 28.3 (J = 23.3), 22.9. HRMS (ESI) m/z: calcd for $C_{17}H_{17}FNO$, 270.1289; found, 270.1288.

3-Benzyl-7-methoxy-1,3-dimethylindolin-2-one (4d): Brown oil (62 mg, 73%). IR (KBr): 2928, 1706, 1463, 1248, 1046, 737 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.07 (d, J = 6.6 Hz, 3H), 6.97 (t, J = 7.9 Hz, 1H), 6.88-6.83 (m, 2H), 6.79-6.73 (m, 2H), 3.74 (s, 3H), 3.26 (s, 3H), 3.05 (dd, J = 53.5, 13.0 Hz, 2H), 1.45 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.3, 145.1, 136.2, 134.7, 129.8, 127.5, 126.4, 122.6, 116.1, 115.3, 111.8, 56.0, 50.0, 44.6, 29.1, 23.1. HRMS (ESI) m/z: calcd for $C_{18}H_{20}NO_2$, 282.1489; found, 282.1489.

3-Benzyl-1,3,5-trimethylindolin-2-one (4e) (known compound): Yellow oil (67 mg, 84%). IR (KBr): 2924, 1710, 1498, 1363, 808 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.06 (dd, J = 7.9, 2.7 Hz, 3H), 7.00-6.93 (m, 2H), 6.88-6.83 (m, 2H), 6.50 (d, J = 7.8 Hz, 1H), 3.05 (dd, J = 41.8, 13.0 Hz, 2H), 2.96 (s, 3H), 2.35 (s, 3H), 1.46 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 179.9, 140.7, 136.2, 133.0, 131.4, 129.8, 127.9, 127.4, 126.3, 124.1, 107.4, 49.9, 44.5, 25.8, 22.7, 21.1. MS (EI, 70 eV) m/z: 265.21, 174.17, 91.15.

3-Benzyl-5-fluoro-1,3-dimethylindolin-2-one (4f) (known compound): Brown solid (50 mg, 62%), mp 104.2-105.3 ^{o}C. IR (KBr): 2927, 1712, 1494, 1241, 1054, 699 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.07 (dd, J = 5.0, 1.7 Hz, 3H), 6.91-6.83 (m, 4H), 6.51 (dd, J = 9.2, 4.1 Hz, 1H), 3.19-2.92 (m, 5H), 1.47 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 179.6, 159.0 (J = 954.0 Hz), 139.0 (J = 7.2 Hz), 135.8, 134.7 (J = 31.4 Hz), 129.7, 127.6, 126.6, 113.8 (J = 93.7 Hz), 111.4 (J = 97.8 Hz), 108.1 (J = 32.5 Hz), 50.4, 44.4, 26.0, 22.6. MS (EI, 70 eV) m/z: 269.19, 178.12, 91.12.

3-Benzyl-5-chloro-1,3-dimethylindolin-2-one (4g) (known compound): Brown oil (59 mg, 69%). IR (KBr): 2927, 1715, 1490, 1350, 882 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.15 (dd, J = 8.2, 1.6 Hz, 1H), 7.09 (t, J = 7.6 Hz, 4H), 6.88-6.82 (m, 2H), 6.52 (d, J = 8.2 Hz, 1H), 3.11 (dd, J = 47.5, 34.4 Hz, 2H), 2.96 (s, 3H), 1.47 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 179.4, 141.7, 135.7, 134.8, 130.0, 127.6, 127.6, 127.5, 126.6, 123.8, 108.6, 50.2, 44.5, 26.0, 22.6. MS (EI, 70 eV) *m*/*z*: 285.13, 194.09, 91.10.

3-Benzyl-1,3,6-trimethylindolin-2-one (4h) and 3-benzyl-1,3,4-trimethylindolin-2-one (4h') (known compound): Yellow oil (71 mg, 89%). IR (KBr): 2927, 1712, 1616, 1460, 1307, 744 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.12-6.96 (m, 4H), 6.91-6.77 (m, 3H), 6.49-6.35 (m, 1H), 3.30-2.85 (m, 5H), 2.44 (d, J = 80.6 Hz, 3H), 1.53 (d, J = 61.9 Hz, 3H). 13C NMR (100 MHz, CDCl3) δ ppm 180.2, 179.6, 143.3, 143.1, 137.6, 136.3, 136.3, 134.0, 129.9, 129.8, 129.7, 128.9, 127.5, 127.4, 127.3, 126.3, 126.2, 124.8, 123.0, 122.5, 108.7, 105.4, 51.1, 49.6, 44.3, 42.3, 25.8, 25.7, 22.8, 21.7, 21.3, 18.4. MS (EI, 70 eV) *m*/*z*: 265.21, 174.17, 91.14.

3-Benzyl-4,5,6-trimethoxy-1,3-dimethylindolin-2-one (4i) (known compound): Black solid (95 mg, 93%), mp 90.8-92.2 ^{o}C. IR (KBr): 2933, 1710, 1614, 1466, 1249, 1021, 703 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 6.98 (d, J = 4.2 Hz, 3H), 6.91-6.83 (m, 2H), 5.90 (s, 1H), 4.08 (s, 3H), 3.82 (s, 3H), 3.79 (s, 3H), 3.19 (dd, J = 42.5, 12.7 Hz, 2H), 2.88 (s, 3H), 1.55 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.2, 153.9, 150.5, 139.1, 137.3, 137.1, 129.1, 127.3, 126.1, 115.2, 89.1, 60.9, 60.8, 56.3, 51.1, 42.7, 25.9, 22.4. MS (EI, 70 eV) m/z: 341.21, 250.19, 91.14.

3-Benzyl-1,3-dimethyl-1*H*-benzo[*g*]indol-2(3*H*)-one (4j) and

3-Benzyl-1,3-dimethyl-1*H*-benzo[*de*]quinolin-2(3*H*)-one (4j'): Red oil (68 mg, 75%). IR (KBr): 2925, 1710, 1432, 1373, 1244, 1053, 700 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 8.19 (dd, J = 35.1, 8.8 Hz, 1H), 7.78 (dd, J = 29.9, 8.8 Hz, 1H), 7.53-7.11 (m, 4H), 6.93 (dd, J = 17.4, 4.1 Hz, 3H), 6.84-6.71 (m, 2H), 3.53 (d, J = 23.2 Hz, 3H), 3.07 (m, 2H), 1.45 (d, J = 6.5 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 181.6, 181.5, 141.0, 138.0, 137.6, 136.1, 136.1, 134.9, 134.3, 132.2, 130.2, 129.8, 129.7, 129.3, 128.8, 128.3, 128.2, 127.5, 127.5, 127.4, 127.2, 126.5, 126.4, 125.5, 125.4, 125.2, 125.1, 122.6, 122.3, 121.6, 121.4, 121.1, 121.0, 120.8, 49.8, 49.8, 44.5, 44.5, 30.6, 30.3, 23.0, 22.9. HRMS (ESI) m/z: calcd for $C_{21}H_{20}NO$, 302.1539; found, 302.1540.

3-Benzyl-1-ethyl-3-methylindolin-2-one (4k) (known compound): Brown solid (68 mg, 85%). IR (KBr): 2975, 1709, 1610, 1460, 1374, 1236, 750 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.19 (dd, J = 13.2, 7.9 Hz, 2H), 7.08-6.99 (m, 4H), 6.82 (dd, J = 7.5, 1.5 Hz, 2H), 6.62 (d, J = 7.7 Hz, 1H), 3.54 (m, 2H), 3.08 (dd, J = 53.9, 12.9 Hz, 2H), 1.48 (s, 3H), 0.86 (t, J = 7.2 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 179.4, 142.2, 136.1, 133.3, 129.8, 127.7, 127.4, 126.3, 123.3, 121.9, 107.9, 49.8, 44.6, 34.1, 22.9, 12.1. MS (EI, 70 eV) *m*/*z*: 265.20, 174.15, 91.13.

1,3-Dibenzyl-3-methylindolin-2-one (4l) (known compound): Brown solid (78 mg, 80%). IR (KBr): 2922, 1712, 1609, 1576, 1172, 744 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.24 (dd, J = 7.2, 4.6 Hz, 1H), 7.12 (q, J = 6.5 Hz, 4H), 7.07-7.01 (m, 4H), 6.87 (d, J = 7.4 Hz, 2H), 6.64 (d, J = 6.7 Hz, 2H), 6.40 (dd, J = 5.5, 3.0 Hz, 1H), 4.72 (dd, J = 211.1, 16.0 Hz, 2H), 3.17 (dd, J = 46.4, 13.0 Hz, 2H), 1.54 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 179.7, 142.3, 136.3, 135.3, 133.0,

130.0, 128.5, 127.8, 127.7, 126.6, 126.5, 123.1, 122.2, 109.1, 50.2, 44.2, 43.4, 24.1. MS (EI, 70 eV) m/z: 327.20, 236.17, 158.15, 91.13.

3-Benzyl-3-methyl-1-phenylindolin-2-one (4m) (known compound): Black oil (54 mg, 58%). IR (KBr): 3033, 1719, 1603, 1498, 1374, 1240, 751 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.39 (t, J = 6.8 Hz, 2H), 7.30 (t, J = 14.6 Hz, 2H), 7.15-7.02 (m, 5H), 6.93 (d, J = 6.8 Hz, 2H), 6.85 (d, J = 6.4 Hz, 2H), 6.49 (d, J = 3.3 Hz, 1H), 3.17 (dd, J = 75.0, 12.8 Hz, 2H), 1.62 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 179.1, 143.3, 136.0, 134.3, 132.7, 129.8, 129.4, 127.9, 127.7, 127.5, 126.6, 126.5, 123.3, 122.5, 109.0, 50.2, 45.4, 22.9. MS (EI, 70 eV) m/z: 313.23, 222.22, 91.16.

1,3-Dimethyl-3-(4-methylbenzyl)indolin-2-one (4n) (known compound): Brown oil (37 mg, 47%). IR (KBr): 2923, 1765, 1465, 1373, 1245, 1028, 750 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.19 (t, J = 7.6 Hz, 1H), 7.11 (d, J = 7.3 Hz, 1H), 7.03 (t, J = 7.5 Hz, 1H), 6.86 (d, J = 7.6 Hz, 2H), 6.74 (d, J = 7.7 Hz, 2H), 6.64 (d, J = 7.7 Hz, 1H), 3.08-2.93 (m, 5H), 2.21 (s, 3H), 1.45 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.1, 143.1, 135.8, 133.2, 133.1, 129.7, 128.2, 127.6, 123.3, 122.0, 107.7, 49.8, 44.0, 25.9, 22.7, 21.0. MS (EI, 70 eV) m/z: 265.23, 160.17, 105.14.

3-(4-Chlorobenzyl)-1,3-dimethylindolin-2-one (4o): Black oil (54 mg, 63%). IR (KBr): 2927, 1763, 1490, 1243, 1095, 750 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.19-7.06 (m, 3H), 7.01-6.89 (m, 2H), 6.67 (d, J = 8.2 Hz, 2H), 6.57 (d, J = 7.7 Hz, 1H), 3.09-2.83 (m, 5H), 1.39 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 161.7, 154.3, 129.5, 125.2, 125.1, 119.4, 112.3, 109.1, 52.3,

28.7. HRMS (ESI) m/z: calcd for $C_{17}H_{17}ClNO$, 286.0993; found, 286.0994.

3-(4-Bromobenzyl)-1,3-dimethylindolin-2-one (4p) (known compound): Yellow oil (58 mg, 59%). IR (KBr): 2926, 1712, 1611, 1496, 1017, 808 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.23-7.12 (m, 4H), 7.05 (d, J = 6.8 Hz, 1H), 6.70 (d, J = 7.0 Hz, 2H), 6.64 (d, J = 7.3 Hz, 1H), 3.14 -2.89 (m, 5H), 1.46 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 179.6, 142.9, 135.1, 132.5, 131.4, 130.5, 127.9, 123.0, 122.2, 120.5, 108.0, 49.8, 43.7, 25.9, 22.3. MS (EI, 70 eV) m/z: 329.17, 160.16.

1,3-Dimethyl-3-phenethylindolin-2-one (5a) (known compound): Green solid (68 mg, 85%), mp 84.8-85.7 ^oC. IR (KBr): 2928, 1711, 1611, 1463, 1244, 1051, 750 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.19 (t, J = 7.7 Hz, 1H), 7.10 (dd, J = 13.9, 7.1 Hz, 3H), 7.01 (dd, J = 14.8, 7.4 Hz, 2H), 6.92 (d, J = 7.3 Hz, 2H), 6.75 (d, J = 7.8 Hz, 1H), 3.10 (s, 3H), 2.27-1.85 (m, 4H), 1.29 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.2, 143.3, 141.3, 133.6, 128.2, 128.1, 127.7, 125.7, 122.5, 122.4, 107.9, 48.2, 40.1, 30.9, 26.0, 23.8. MS (EI, 70 eV) m/z: 265.19, 161.12, 91.09.

1,3,7-Trimethyl-3-phenethylindolin-2-one (5b): Brown oil (58 mg, 69%). IR (KBr): 2928, 1708, 1457, 1243, 1071, 780 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.21 (t, J = 7.3 Hz, 2H), 7.13 (t, J = 7.3 Hz, 1H), 7.09-6.95 (m, 5H), 3.49 (s, 3H), 2.61 (s, 3H), 2.35-1.92 (m, 4H), 1.38 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 181.0, 141.4, 141.1, 134.5, 131.5, 128.2, 128.1, 125.7, 122.4, 120.3, 119.6, 47.6, 40.5, 30.9, 29.4, 24.3, 19.0. HRMS (ESI) m/z: calcd for $C_{19}H_{22}NO$, 280.1696; found, 280.1696.

7-Fluoro-1,3-dimethyl-3-phenethylindolin-2-one (5c): Light yellow solid (74 mg, 87%), mp 83.2-84.4 ^{o}C. IR (KBr): 2928, 1719, 1484, 1237, 1055, 737 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.21 (t, *J* = 7.4 Hz, 2H), 7.14 (t, *J* = 7.1 Hz, 1H), 7.05-6.97 (m, 5H), 3.42 (s, 3H), 2.32-2.28 (m, 2H), 2.21-1.93 (m, 2H), 1.39 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 179.9, 147.7 (*J* = 968.9 Hz), 141.0, 136.7 (*J* = 11.9 Hz), 129.9 (*J* = 32.0 Hz), 128.2, 128.2, 125.9, 123.1 (*J* = 25.4 Hz), 118.3 (*J* = 12.3 Hz), 115.8 (*J* = 76.8 Hz), 48.7, 40.3, 30.9, 28.5 (*J* = 22.8 Hz), 24.2. HRMS (ESI) m/z: calcd for $C_{18}H_{19}FNO$, 284.1445; found, 284.1444.

7-Chloro-1,3-dimethyl-3-phenethylindolin-2-one (5d): Yellow oil (74 mg, 82%). IR (KBr): 2927, 1720, 1463, 1248, 1248, 1064, 741 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.21 (dd, *J* = 7.6, 4.3 Hz, 3H), 7.16-7.07 (m, 2H), 7.01 (d, *J* = 7.7 Hz, 3H), 3.57 (s, 3H), 2.29 (tt, *J* = 9.3, 4.7 Hz, 2H), 2.19-1.92 (m, 2H), 1.38 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.4, 141.0, 139.3, 136.5, 130.1, 128.2, 128.2, 125.9, 123.3, 120.9, 115.5, 48.1, 40.3.2, 30.9, 29.4, 24.3. HRMS (ESI) m/z: calcd for $C_{18}H_{19}ClNO$, 300.1150; found, 300.1149.

7-Methoxy-1,3-dimethyl-3-phenethylindolin-2-one (5e): Yellow oil (58 mg, 66%). IR (KBr): 2931, 1709, 1463, 1248, 1053, 739 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.21 (t, *J* = 7.4 Hz, 2H), 7.13 (t, *J* = 7.1 Hz, 1H), 7.05 (t, *J* = 7.2 Hz, 3H), 6.90-6.83 (m, 2H), 3.88 (s, 3H), 3.50 (s, 3H), 2.30-2.26 (m, 2H), 2.06-2.01 (m, 2H), 1.38 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.5, 145.3, 141.5, 135.4, 131.1, 128.2, 128.2, 125.7, 123.1, 115.1, 111.6, 55.8, 48.4, 40.4, 30.9, 29.3,

24.1. HRMS (ESI) m/z: calcd for $C_{19}H_{22}NO_2$, 296.1645; found, 296.1646.

5-Fluoro-1,3-dimethyl-3-phenethylindolin-2-one (5f): Yellow oil (69 mg, 81%). IR (KBr): 2930, 1713, 1494, 1242, 1115, 698 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.21 (t, *J* = 7.4 Hz, 2H), 7.13 (t, *J* = 7.1 Hz, 1H), 7.05-6.94 (m, 4H), 6.77 (dd, *J* = 8.3, 4.1 Hz, 1H), 3.19 (s, 3H), 2.31-2.27 (m, 2H), 2.19-1.93 (m, 2H), 1.39 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) *δ* ppm 179.9, 159.4 (*J* = 956.6 Hz), 141.0, 139.3 (*J* = 7.1 Hz), 135.4 (*J* = 30.7 Hz), 128.2, 128.2, 125.9, 113.9 (*J* = 93.3 Hz), 110.6 (*J* = 97.5 Hz), 108.4 (*J* = 32.4 Hz), 48.8 (*J* = 6.8 Hz), 40.1, 30.9, 26.2, 23.9. HRMS (ESI) m/z: calcd for $C_{18}H_{19}FNO$, 284.1445; found, 284.1445.

5-Chloro-1,3-dimethyl-3-phenethylindolin-2-one (5g): Yellow oil (72 mg, 80%). IR (KBr): 2929, 1716, 1489, 1345, 1243, 1085, 701 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.24 (s, 1H), 7.23-7.15 (m, 3H), 7.12 (t, *J* = 7.1 Hz, 1H), 7.01 (d, **J** = 7.5 Hz, 2H), 6.76 (d, *J* = 8.2 Hz, 1H), 3.17 (s, 3H), 2.30-2.25 (m, 2H), 2.20-1.93 (m, 2H), 1.37 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) *δ* ppm 179.7, 142.0, 140.9, 135.5, 128.2, 128.2, 128.0, 127.8, 126.0, 123.1, 108.9, 48.6, 40.0, 30.9, 26.2, 23.9. HRMS (ESI) m/z: calcd for $C_{18}H_{19}ClNO$, 300.1150; found, 300.1146.

5-Iodo-1,3-dimethyl-3-phenethylindolin-2-one (5h): Brown oil (102 mg, 87%). IR (KBr): 2927, 1714, 1602, 1465, 1341, 1243, 1064, 701 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.60 (d, *J* = 6.9 Hz, 1H), 7.48 (s, 1H), 7.21 (t, *J* = 7.3 Hz, 2H), 7.14 (t, *J* = 7.2 Hz, 1H), 7.02 (d, *J* = 7.3 Hz, 2H), 6.64 (d, *J* = 8.1 Hz, 1H), 3.17 (s, 3H), 2.40-1.93 (m, 4H), 1.38 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) *δ* ppm 179.5, 143.1, 140.9, 136.6, 136.2, 131.4, 128.2, 128.2, 126.0, 110.0, 85.1, 48.4,

39.9, 30.9, 26.1, 23.9. HRMS (ESI) m/z: calcd for $C_{18}H_{19}INO$, 392.0506; found, 392.0504.

Methyl 1,3-dimethyl-2-oxo-3-phenethylindoline-5-carboxylate (5i): Yellow solid (45 mg, 46%), mp 89.6-91.4 ^{o}C. IR (KBr): 2946, 1716, 1614, 1452, 1270, 1104, 768 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 8.05 (d, *J* = 8.2 Hz, 1H), 7.89 (s, 1H), 7.19 (t, *J* = 7.4 Hz, 2H), 7.11 (t, *J* = 7.0 Hz, 1H), 6.99 (d, *J* = 7.5 Hz, 2H), 6.89 (d, *J* = 8.1 Hz, 1H), 3.93 (s, 3H), 3.21 (s, 3H), 2.30 (dd, *J* = 17.5, 8.0 Hz, 2H), 2.22-2.00 (m, 2H), 1.41 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) *δ* ppm 180.5, 166.9, 147.5, 140.8, 133.6, 130.6, 128.2, 128.2, 125.9, 124.5, 123.7, 107.5, 52.0, 48.2, 39.9, 30.9, 26.3, 23.9. HRMS (ESI) m/z: calcd for $C_{20}H_{22}NO_3$, 324.1594; found, 324.1593.

1,3,6-Trimethyl-3-phenethylindolin-2-one (5j) and 1,3,4-trimethyl-3-phenethylindolin-2-one (5j'): Yellow oil (66 mg, 73%). IR (KBr): 2928, 1712, 1608, 1461, 1374, 1060, 749 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.25-7.09 (m, 4H), 7.02 (dd, *J* = 13.7, 7.4 Hz, 2H), 6.90 (dd, *J* = 20.8, 7.6 Hz, 1H), 6.70 (t, *J* = 8.1 Hz, 1H), 3.19 (d, *J* = 10.1 Hz, 3H), 2.42 (d, *J* = 4.9 Hz, 3H), 2.38-1.95 (m, 4H), 1.42 (d, *J* = 29.4 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) *δ* ppm 180.6, 180.3, 143.6, 143.5, 141.5, 141.3, 137.8, 134.1, 130.7, 130.1, 128.3, 128.2, 128.2, 128.2, 127.7, 125.8, 125.8, 125.0, 123.0, 122.2, 108.9, 105.8, 49.4, 48.1, 40.3, 38.1, 31.5, 30.9, 26.2, 26.1, 24.0, 22.4, 21.8, 18.2. HRMS (ESI) m/z: calcd for $C_{19}H_{22}NO$, 280.1696; found, 280.1697.

4,5,6-Trimethoxy-1,3-dimethyl-3-phenethylindolin-2-one (5k): Red oil (67 mg, 63%). IR (KBr): 2933, 1711, 1613, 1465, 1247, 1104, 701 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.19 (t, J = 7.4 Hz, 2H), 7.11 (t, *J* = 7.2 Hz, 1H), 7.02 (d, *J* = 7.5 Hz, 2H), 6.24 (s, 1H), 3.99 (s, 3H), 3.92 (s, 3H),

3.83 (s, 3H), 3.15 (s, 3H), 2.33-2.01 (m, 4H), 1.43 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.7, 154.0, 150.6, 141.5, 139.4, 137.5, 128.3, 128.1, 125.7, 115.8, 89.5, 61.0, 60.7, 56.4, 49.2, 38.6, 31.6, 26.2, 23.0. HRMS (ESI) m/z: calcd for $C_{21}H_{26}NO_4$, 356.1856; found, 356.1857.

1,3-Dimethyl-3-phenethyl-1*H*-benzo[*g*]indol-2(3*H*)-one (5l): Brown oil (61 mg, 64%). IR (KBr): 2930, 1664, 1586, 1377, 1244, 1059, 767 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.77 (d, J = 8.1 Hz, 1H), 7.63-7.43 (m, 4H), 7.17-7.13 (m, 3H), 6.98 (dd, J = 19.4, 7.5 Hz, 3H), 3.53 (s, 3H), 2.61-2.55 (m, 2H), 2.21-2.17 (m, 2H), 1.74 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 173.1, 141.5, 138.0, 136.8, 133.3, 128.2, 128.1, 127.1, 126.4, 126.0, 125.7, 122.6, 122.4, 119.8, 108.3, 47.5, 46.2, 31.8, 31.1, 29.6. HRMS (ESI) m/z: calcd for $C_{22}H_{22}NO$, 316.1696; found, 316.1695.

1-Methyl-1-phenethyl-5,6-dihydro-1*H*-pyrrolo[3,2,1-*ij*]quinolin-2(4*H*)-one (5m): Yellow oil (52 mg, 59%). IR (KBr): 2928, 1708, 1483, 1351, 1241, 749 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.25-6.94 (m, 8H), 3.74-3.68 (m, 2H), 2.81 (t, J = 5.5 Hz, 2H), 2.35 (dd, J = 17.7, 5.2 Hz, 1H), 2.30-2.16 (m, 2H), 2.02 (dd, J = 11.7, 6.8 Hz, 3H), 1.41 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 179.2, 141.5, 139.1, 132.3, 128.3, 128.2, 126.6, 125.8, 122.0, 120.4, 120.0, 49.7, 40.0, 39.7, 31.1, 24.6, 23.6, 21.3. HRMS (ESI) m/z: calcd for $C_{20}H_{22}NO$, 292.1696; found, 292.1694.

1-Ethyl-3-methyl-3-phenethylindolin-2-one (5n): Yellow oil (79 mg, 94%). IR (KBr): 2974, 1710, 1610, 1488, 1363, 1242, 750 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.28-7.22 (m, 4H), 7.17-7.02 (m, 4H), 6.90 (d, J = 7.8 Hz, 1H), 3.93-3.65 (m, 2H), 2.34-2.26 (m, 2H), 2.18-1.95 (m, 2H), 1.40 (s, 3H), 1.28 (t, J = 7.2 Hz, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 179.8, 142.4,

141.5, 134.0, 128.2, 128.2, 127.7, 125.8, 122.6, 122.3, 108.1, 48.2, 40.4, 34.8, 30.8, 23.8, 12.8. HRMS (ESI) m/z: calcd for $C_{19}H_{22}NO$, 280.1696; found, 280.1694.

1-Benzyl-3-methyl-3-phenethylindolin-2-one (5o): Brown oil (89 mg, 87%). IR (KBr): 2926, 1711, 1610, 1490, 1354, 1243, 1174, 749, 700 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.30 (d, *J* = 4.3 Hz, 4H), 7.22 (dd, *J* = 15.7, 8.1 Hz, 4H), 7.17-7.11 (m, 2H), 7.05 (t, *J* = 7.9 Hz, 3H), 6.75 (d, *J* = 7.8 Hz, 1H), 4.92 (q, *J* = 15.6 Hz, 2H), 2.38-2.32 (m, 2H), 2.24-1.97 (m, 2H), 1.45 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) *δ* ppm 180.4, 142.4, 141.4, 136.1, 133.7, 128.7, 128.2, 128.2, 127.7, 127.5, 127.2, 125.8, 122.6, 122.5, 109.1, 48.4, 43.6, 40.3, 31.0, 24.2. HRMS (ESI) m/z: calcd for $C_{24}H_{24}NO$, 342.1852; found, 342.1849.

3-Methyl-3-phenethyl-1-phenylindolin-2-one (5p): Black solid (62 mg, 63%), mp 95.1-96.4 °C. IR (KBr): 2925, 1763, 1722, 1497, 1373, 1243, 1057, 752, 698 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.54 (t, *J* = 7.6 Hz, 2H), 7.42 (d, *J* = 7.7 Hz, 3H), 7.31 (d, *J* = 7.3 Hz, 1H), 7.24 (t, *J* = 9.1 Hz, 3H), 7.15 (t, *J* = 7.3 Hz, 2H), 7.08 (d, *J* = 7.3 Hz, 2H), 6.88 (d, *J* = 7.8 Hz, 1H), 2.57-2.33 (m, 2H), 2.23-2.15 m, 2H), 1.53 (s, 3H). ^{13}C NMR (100 MHz, $CDCl_3$) *δ* ppm 179.8, 143.3, 141.4, 134.6, 133.5, 129.5, 128.3, 128.3, 127.9, 127.7, 126.5, 125.9, 123.1, 122.8, 109.4, 48.5, 40.8, 31.0, 24.2. HRMS (ESI) m/z: calcd for $C_{23}H_{22}NO$, 328.1696; found, 328.1692.

1,3-Dimethyl-3-(3-phenylpropyl)indolin-2-one (5q): Yellow oil (43 mg, 51%). IR (KBr): 2927, 1711, 1610, 1462, 1243, 1050, 749 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.22 (dd, *J* = 14.9, 8.3 Hz, 3H), 7.17-7.10 (m, 2H), 7.05 (t, *J* = 7.3 Hz, 3H), 6.81 (d, *J* = 7.8 Hz, 1H), 3.19 (s, 3H),

2.59-2.36 (m, 2H), 1.91-1.83 (m, 2H), 1.39-1.07 (m, 5H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.7, 143.3, 141.9, 134.0, 128.3, 128.2, 127.6, 125.7, 122.4, 122.4, 107.9, 48.3, 38.1, 35.9, 26.4, 26.1, 23.8. HRMS (ESI) m/z: calcd for $C_{19}H_{21}NO$, 279.1623; found, 279.1624.

1,3-Dimethyl-3-pentylindolin-2-one (5r): Yellow oil (46 mg, 67%). IR (KBr): 2930, 1714, 1612, 1466, 1245, 750 cm^{-1}. ^{1}H NMR (400 MHz, d-acetone) δ ppm 7.26 (dd, J = 9.6, 5.7 Hz, 1H), 7.16 (d, J = 7.3 Hz, 1H), 7.06 (t, J = 7.5 Hz, 1H), 6.84 (d, J = 7.7 Hz, 1H), 3.21 (s, 3H), 1.92-1.68 (m, 2H), 1.34 (s, 3H), 1.16-1.13 (m, 4H), 1.05-0.76 (m, 5H). ^{13}C NMR (100 MHz, d-acetone) δ ppm 180.8, 143.3, 134.3, 127.5, 122.4, 122.4, 107. 8, 48.4, 38.4, 31.9, 26.0, 24.0, 23.7, 22.3, 13.9. HRMS (ESI) m/z: calcd for $C_{15}H_{22}NO$, 232.1696; found, 232.1695.

5-Chloro-1,3-dimethyl-3-pentylindolin-2-one (5s): Brown oil (47 mg, 59%). IR (KBr): 2930, 1716, 1487, 1243, 1093, 812 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 7.23 (d, J = 8.2 Hz, 1H), 7.13 (s, 1H), 6.75 (d, J = 8.2 Hz, 1H), 3.19 (s, 3H), 1.94-1.55 (m, 2H), 1.33 (s, 3H), 1.14 (t, J = 10.8 Hz, 4H), 1.05-0.70 (m, 5H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.3, 141.9, 136.1, 127.8, 127.5, 123.0, 108.7, 48.8, 38.4, 31.8, 26.2, 24.1, 23.7, 22.3, 13.9. HRMS (ESI) m/z: calcd for $C_{15}H_{21}ClNO$, 266.1306; found, 266.1301.

4,5,6-Trimethoxy-1,3-dimethyl-3-pentylindolin-2-one (5t): Brown oil (67 mg, 70%). IR (KBr): 2933, 1764, 1712, 1614, 1466, 1245, 1154, 1111 cm^{-1}. ^{1}H NMR (400 MHz, $CDCl_3$) δ ppm 6.21 (s, 1H), 3.92 (s, 3H), 3.89 (s, 3H), 3.80 (s, 3H), 3.15 (s, 3H), 1.99-1.76 (m, 2H), 1.37 (s, 3H), 1.20-1.05 (m, 4H), 0.93-0.67 (m, 5H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 181.2, 153.7, 150.5, 139.3,

137.5, 116.4, 89.5, 60.9, 60.6, 56.3, 49.3, 37.0, 31.8, 26.1, 24.6, 23.0, 22.3, 13.9. HRMS (ESI) m/z: calcd for $C_{18}H_{28}NO_4$, 322.2013; found, 322.2009.

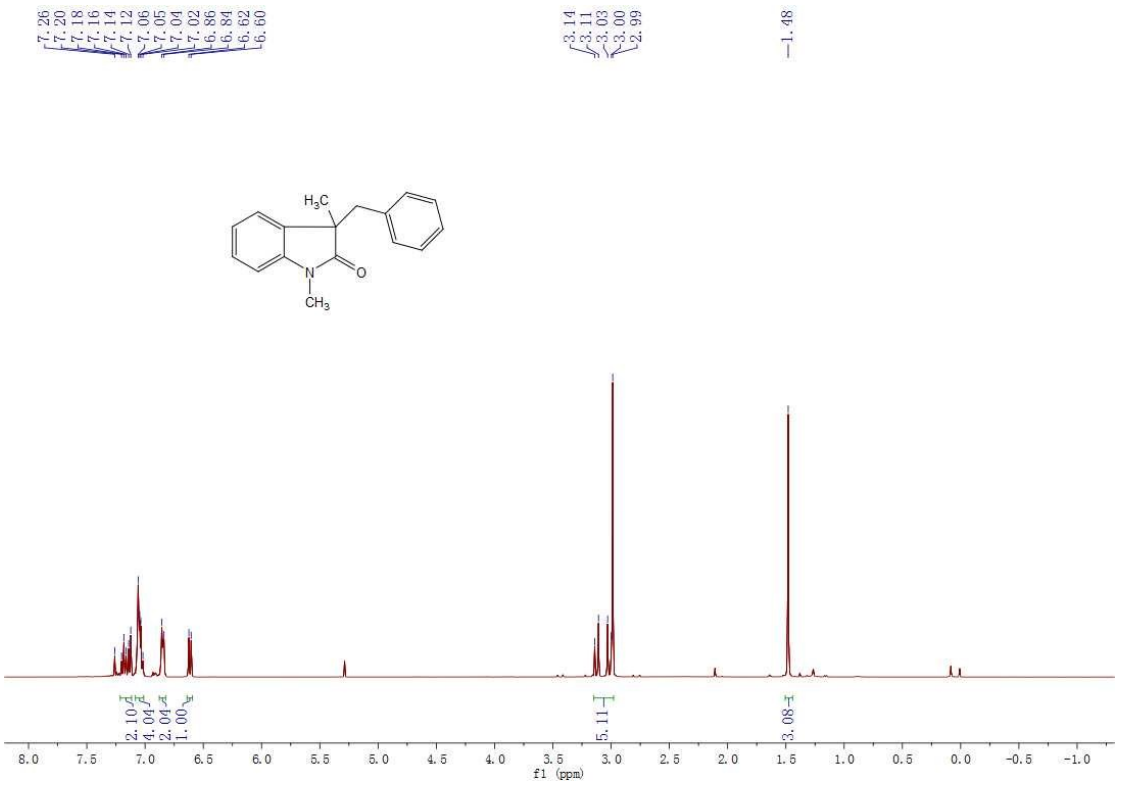
1-Benzyl-3-methyl-3-pentylindolin-2-one (5u): Black oil (57 mg, 62%). IR (KBr): 2929, 1764, 1712, 1460, 1372, 1243, 1055, 746 cm^{-1}. ^1H NMR (400 MHz, $CDCl_3$) δ ppm 7.32-7.22 (m, 5H), 7.15 (dd, J = 16.9, 7.6 Hz,2H), 7.02 (t, J = 7.5 Hz, 1H), 6.71 (d, J = 7.7 Hz, 1H), 4.92 (dd, J = 59.3, 15.6 Hz, 2H), 1.99-1.73 (m, 2H), 1.40 (s, 3H), 1.24-1.12 (m, 4H), 1.10-0.73 (m, 5H). ^{13}C NMR (100 MHz, $CDCl_3$) δ ppm 180.9, 142.4, 136.2, 134.3, 128.7, 127.5, 127.4, 127.3, 122.5, 122.4, 108.9, 48.4, 43.6, 38.5, 31.9, 24.3, 24.2, 22.3, 13.9. HRMS (ESI) m/z: calcd for $C_{21}H_{26}NO$, 308.2009; found, 308.2012.

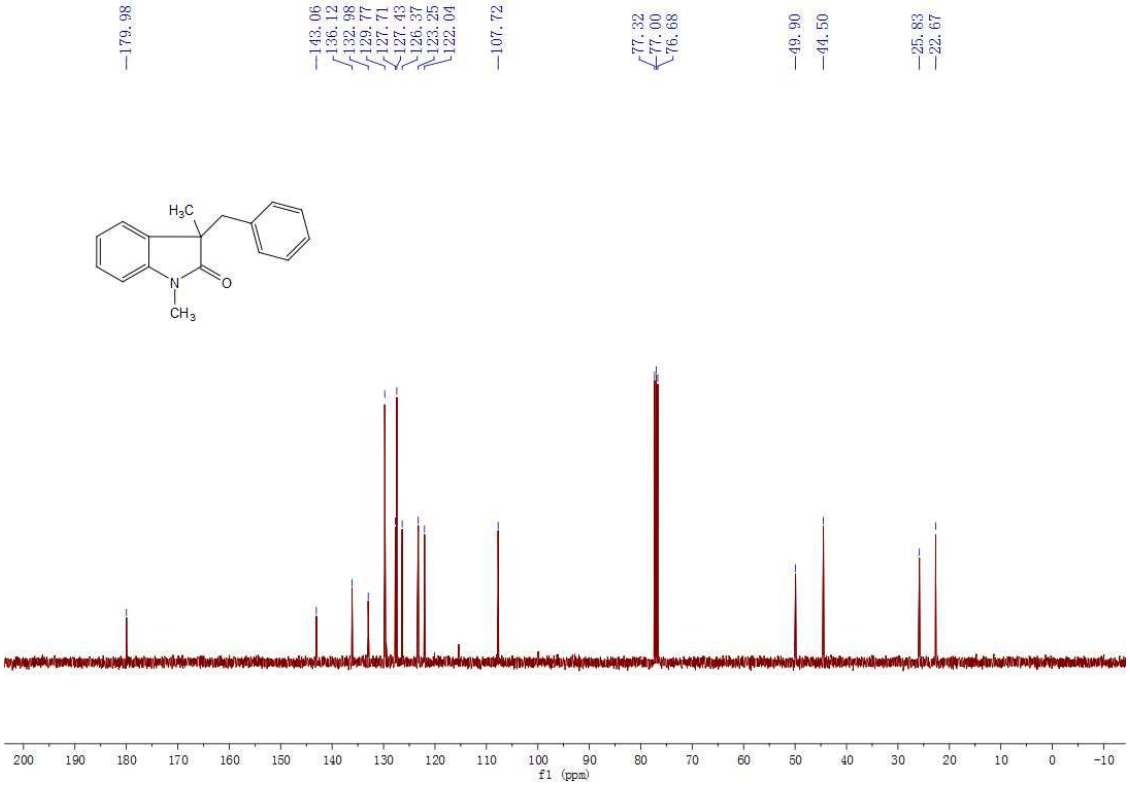
Reference:

[1] W. Fu,; Xu, F.; Fu, Y.; Zhu, M.; Yu, J.; Xu, C.; Zou, D. *J. Org. Chem.* **2013**, *78*, 12202.
[2] Zhou, B.; Hou, W.; Yang, Y.; Feng, H.; Li, Y. *Org. Lett.* **2014**, *16*, 1322.

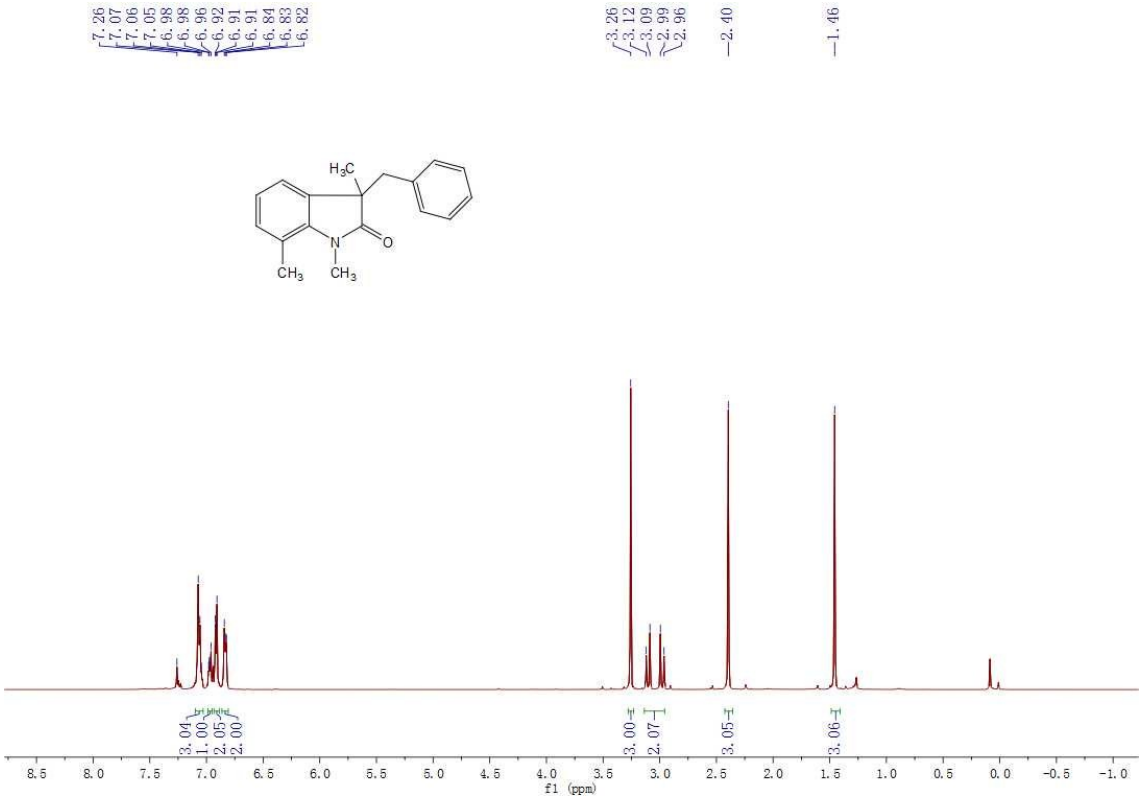
F. NMR Spectra

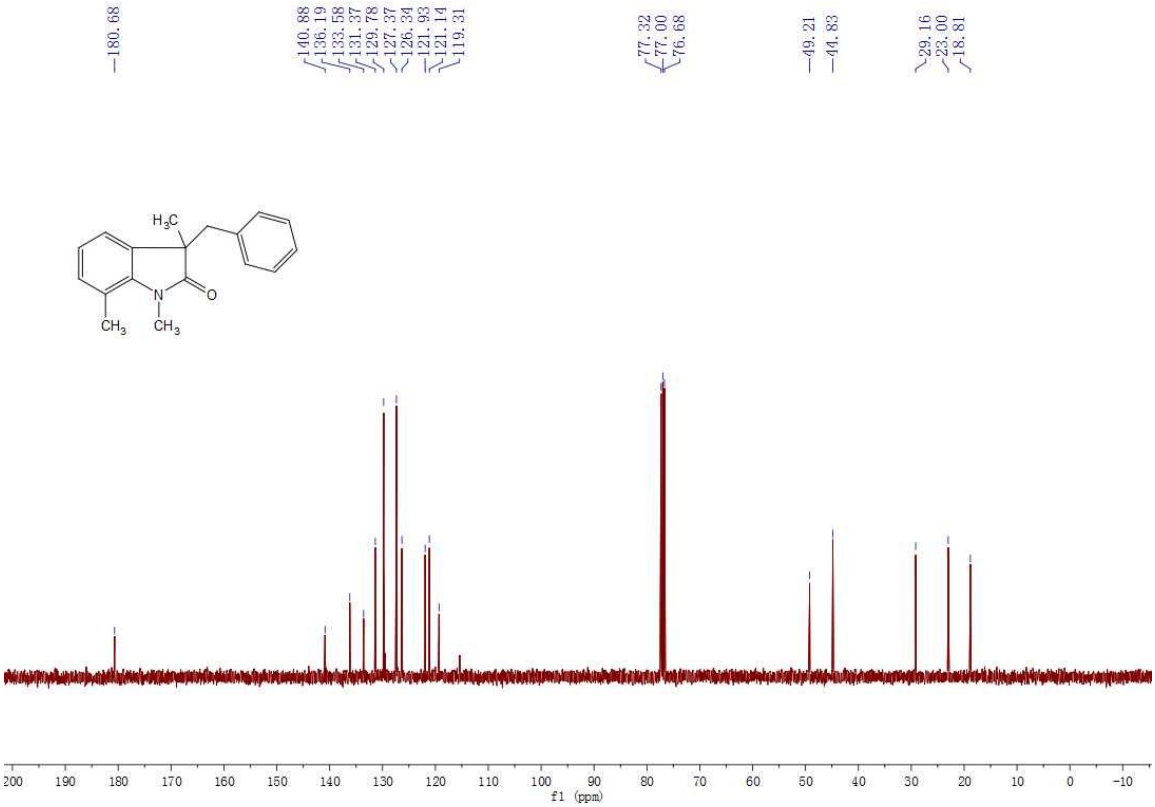
3-Benzyl-1,3-dimethylindolin-2-one (4a):



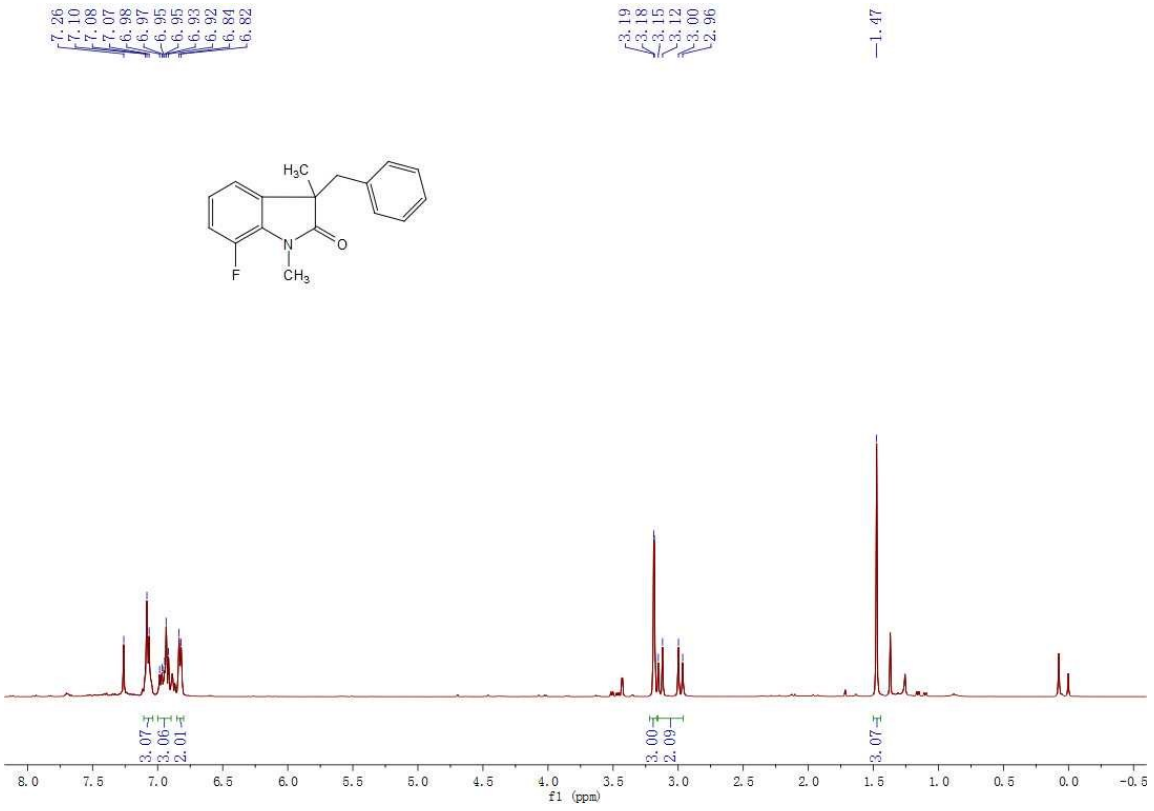


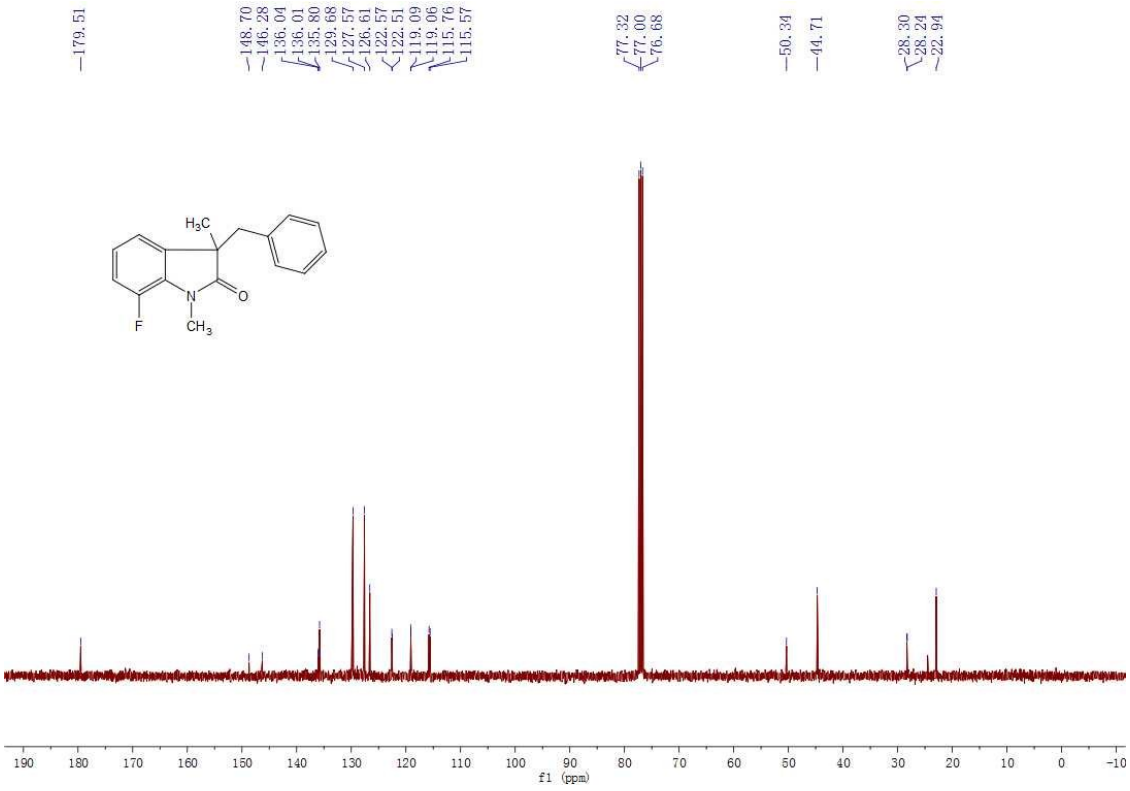
3-Benzyl-1,3,7-trimethylindolin-2-one (4b):



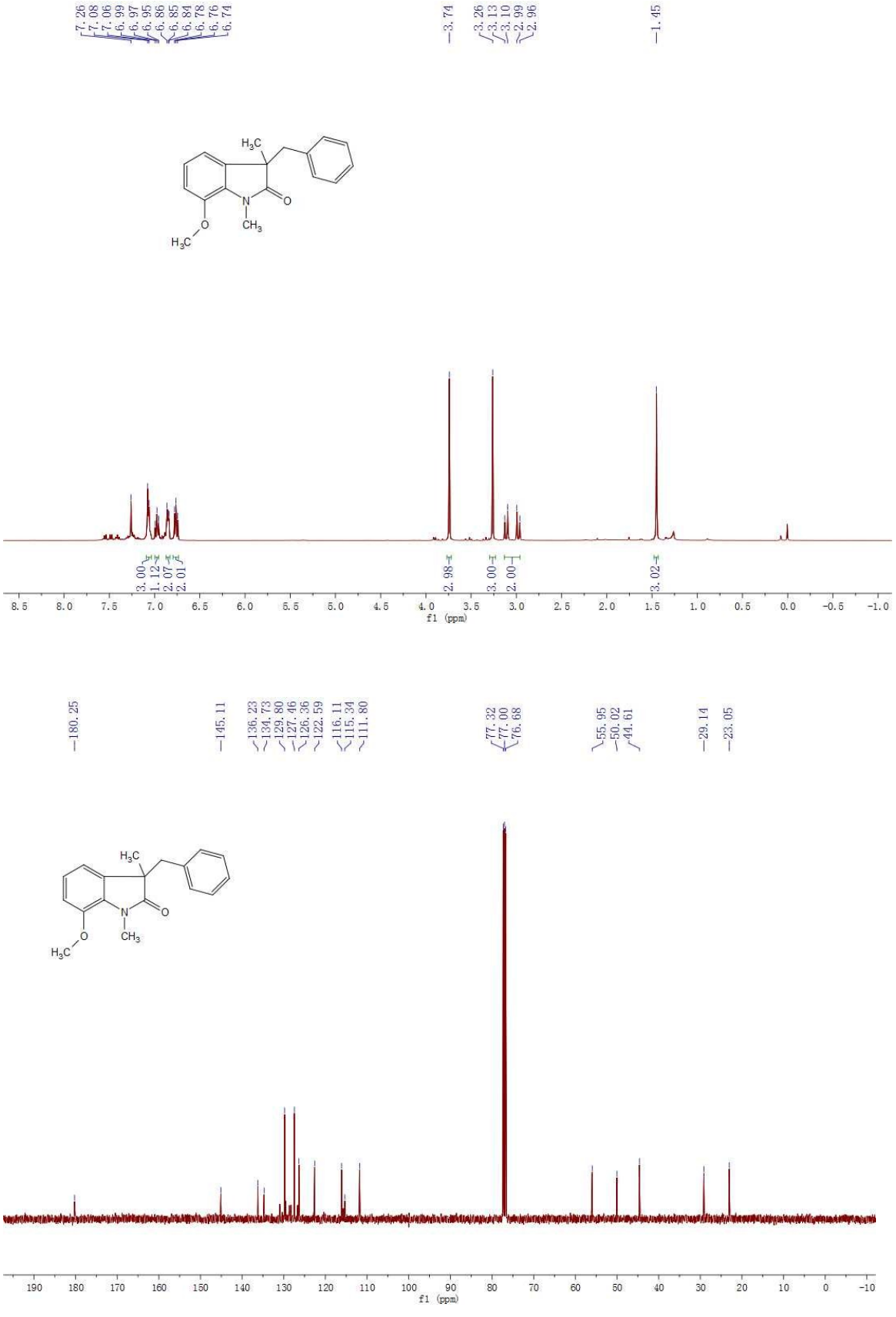


3-Benzyl-7-fluoro-1,3-dimethylindolin-2-one (4c):

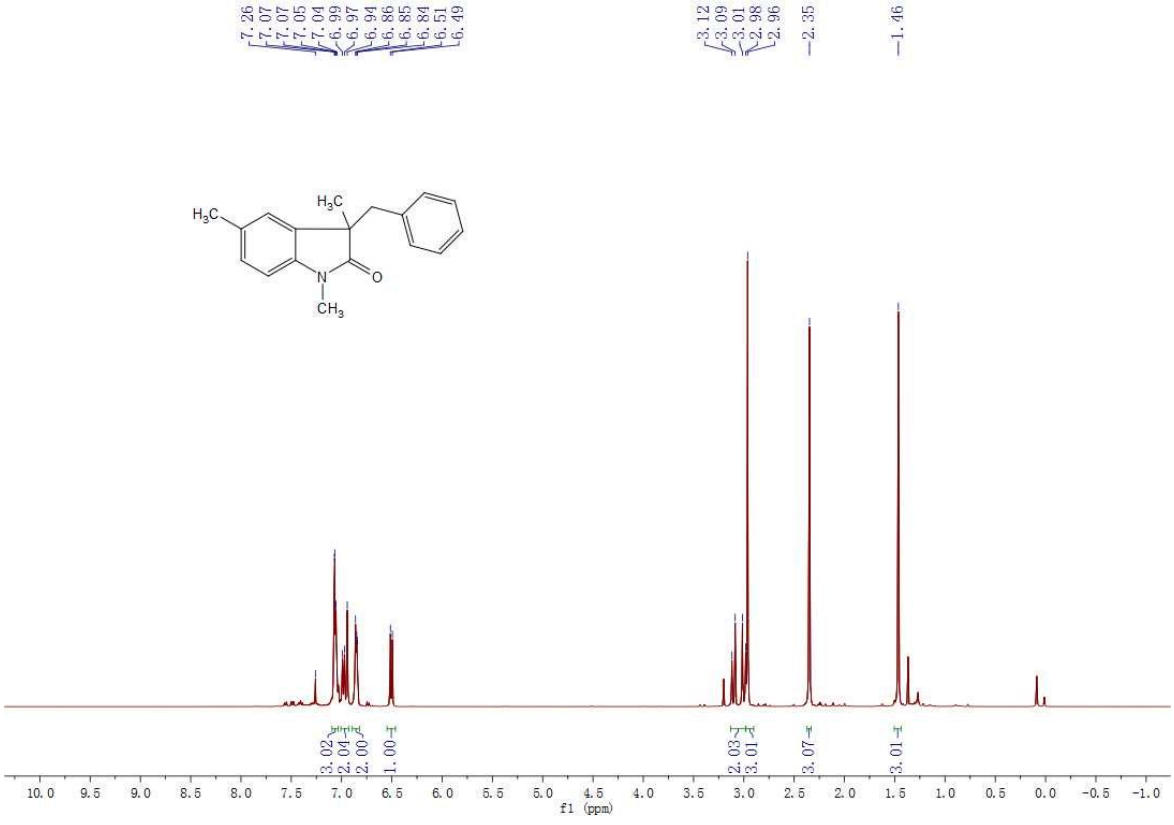


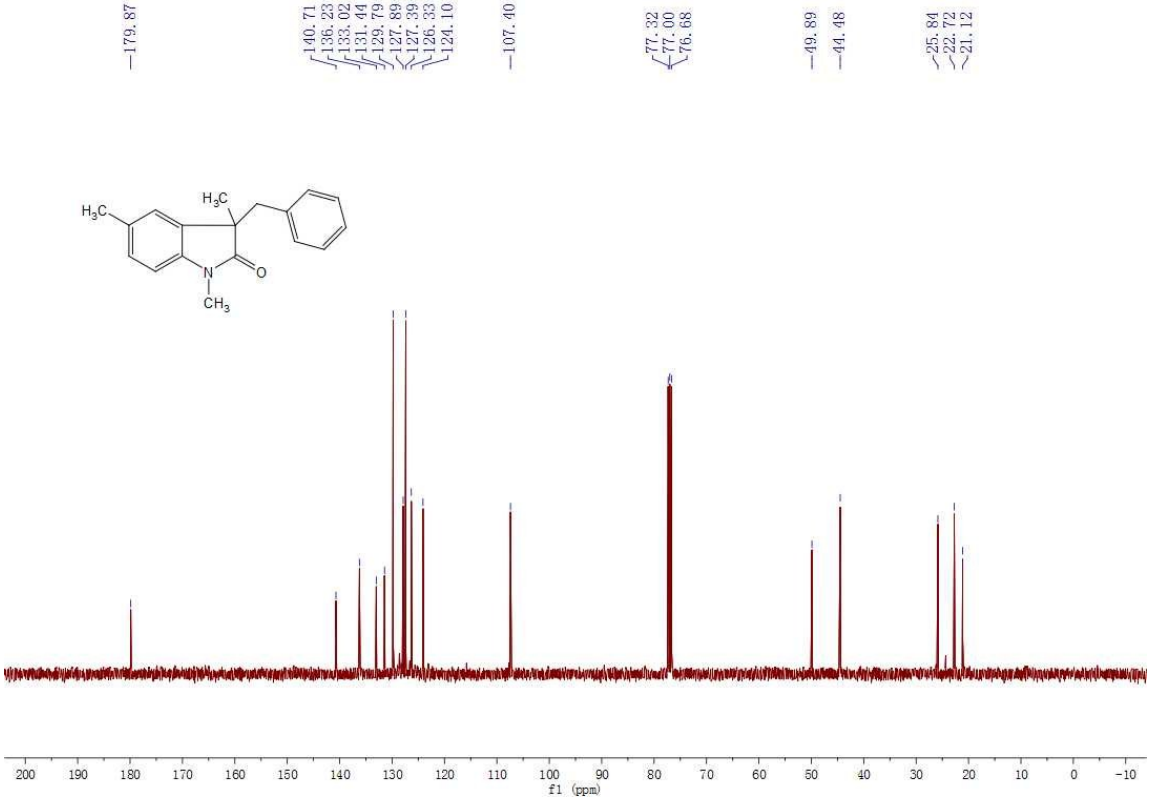


3-Benzyl-7-methoxy-1,3-dimethylindolin-2-one (4d):

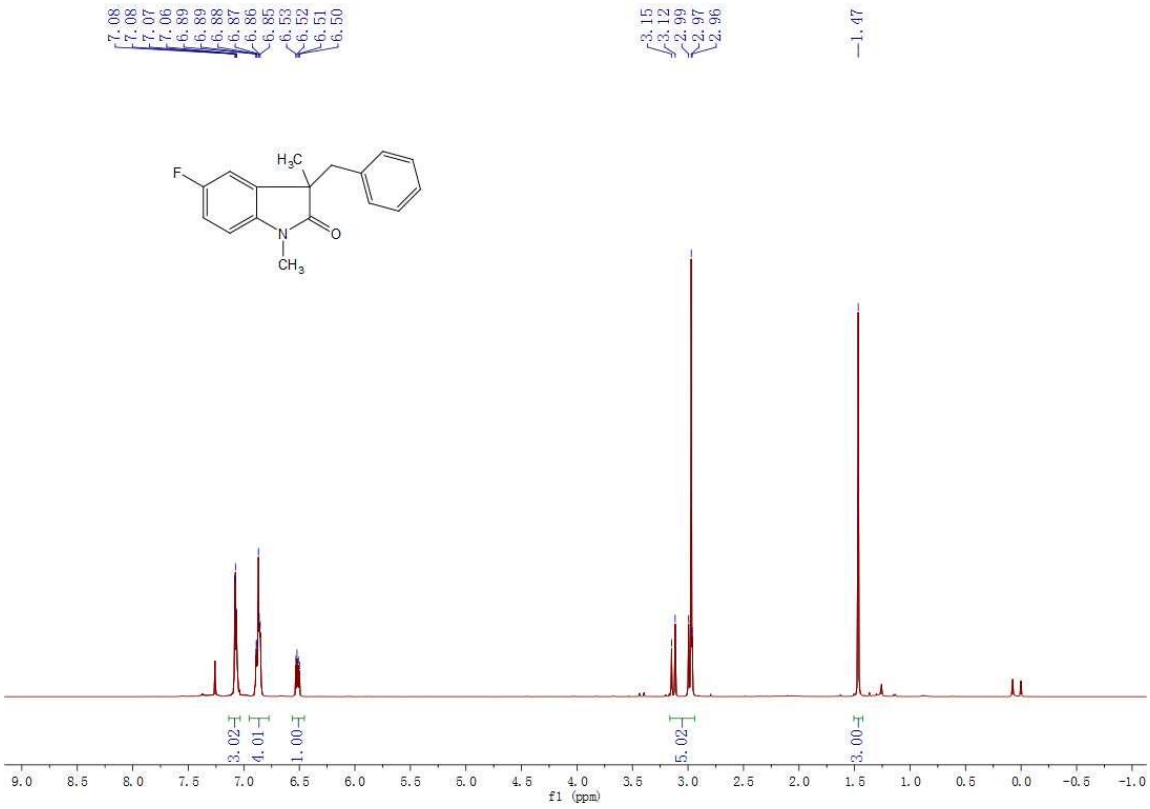


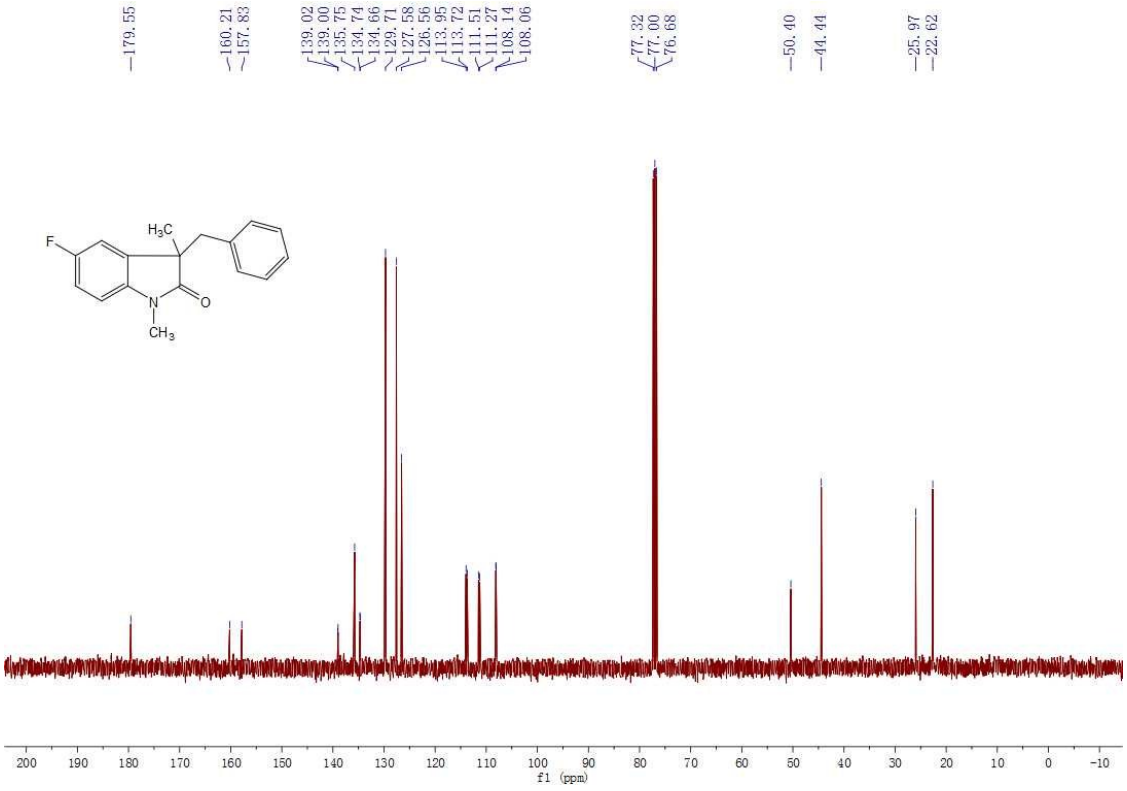
3-Benzyl-1,3,5-trimethylindolin-2-one (4e):



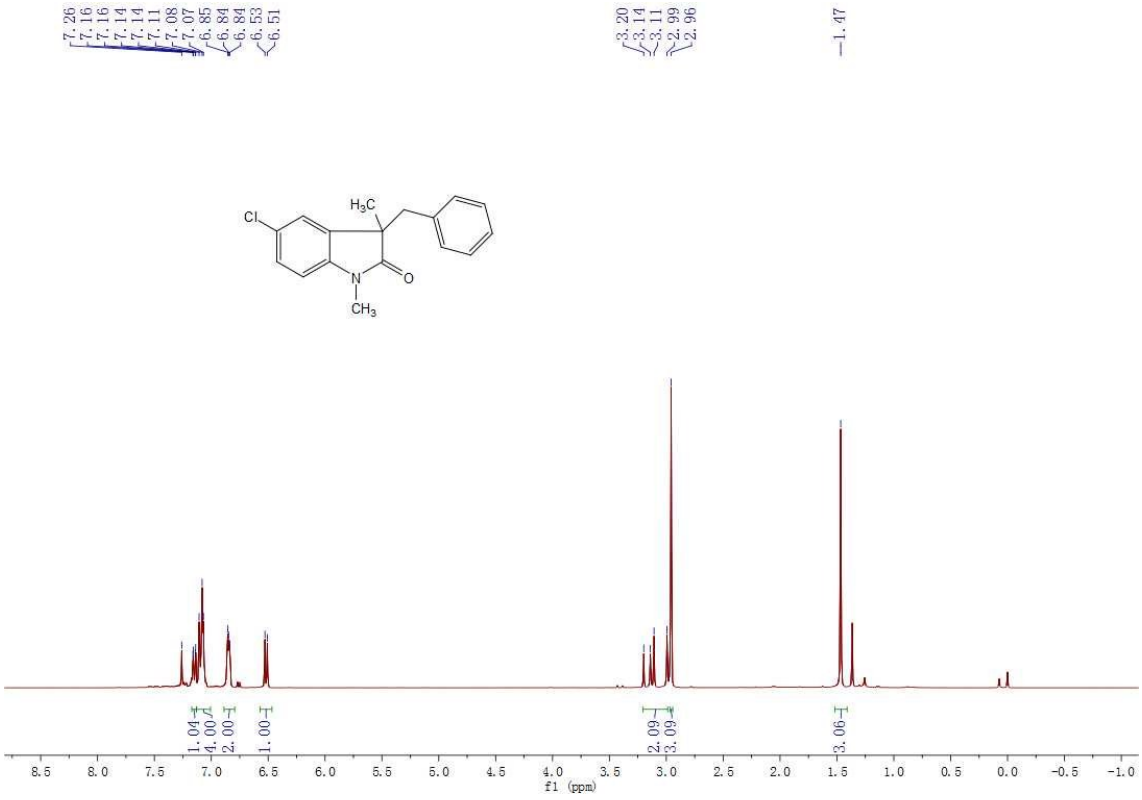


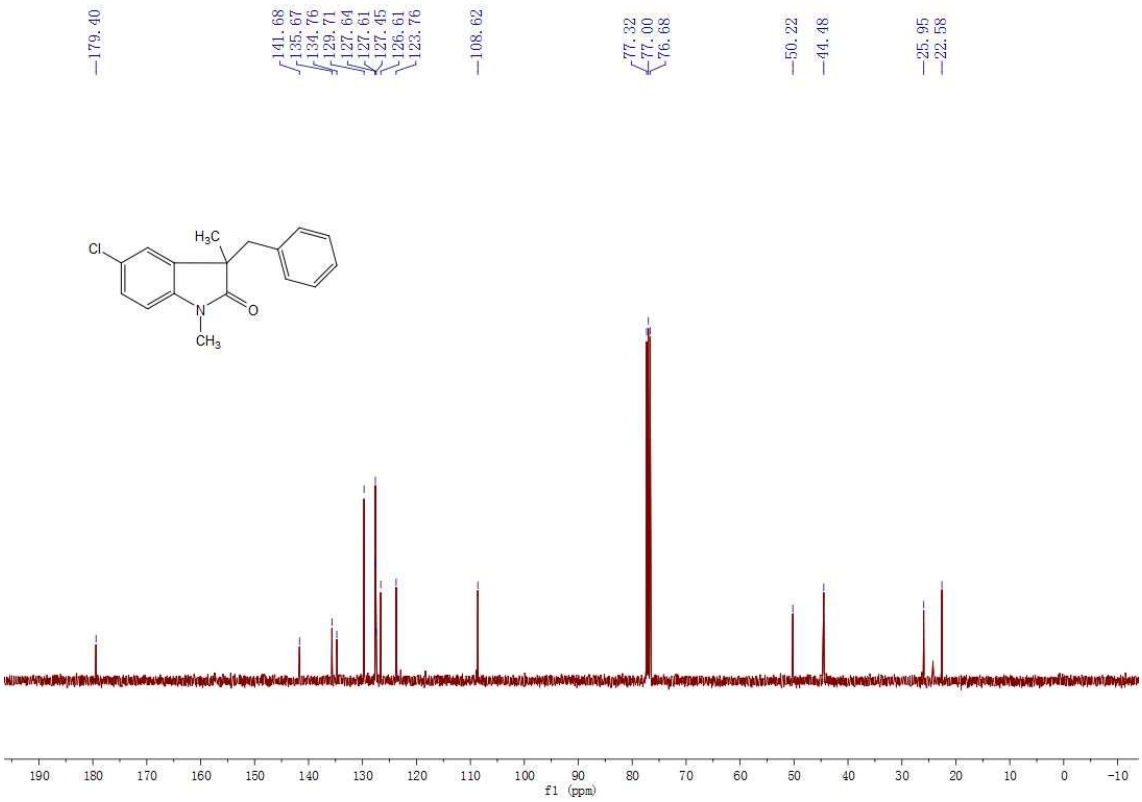
3-Benzyl-5-fluoro-1,3-dimethylindolin-2-one (4f):



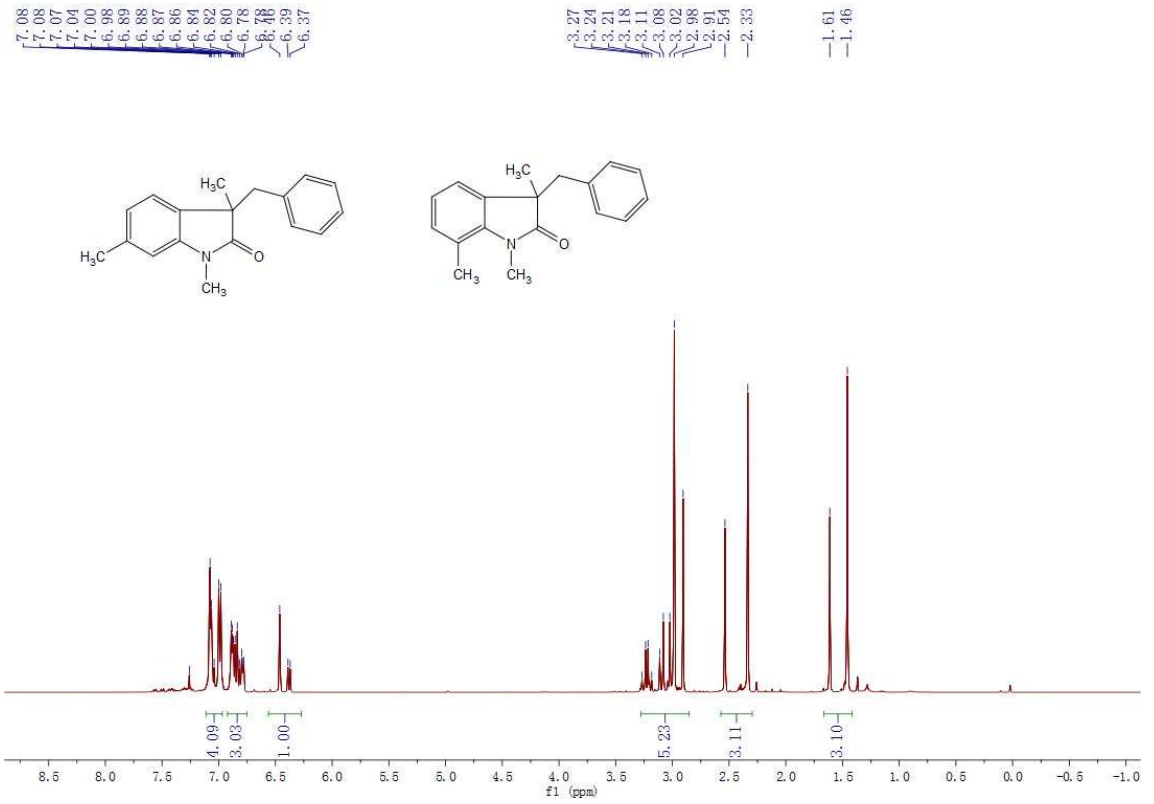


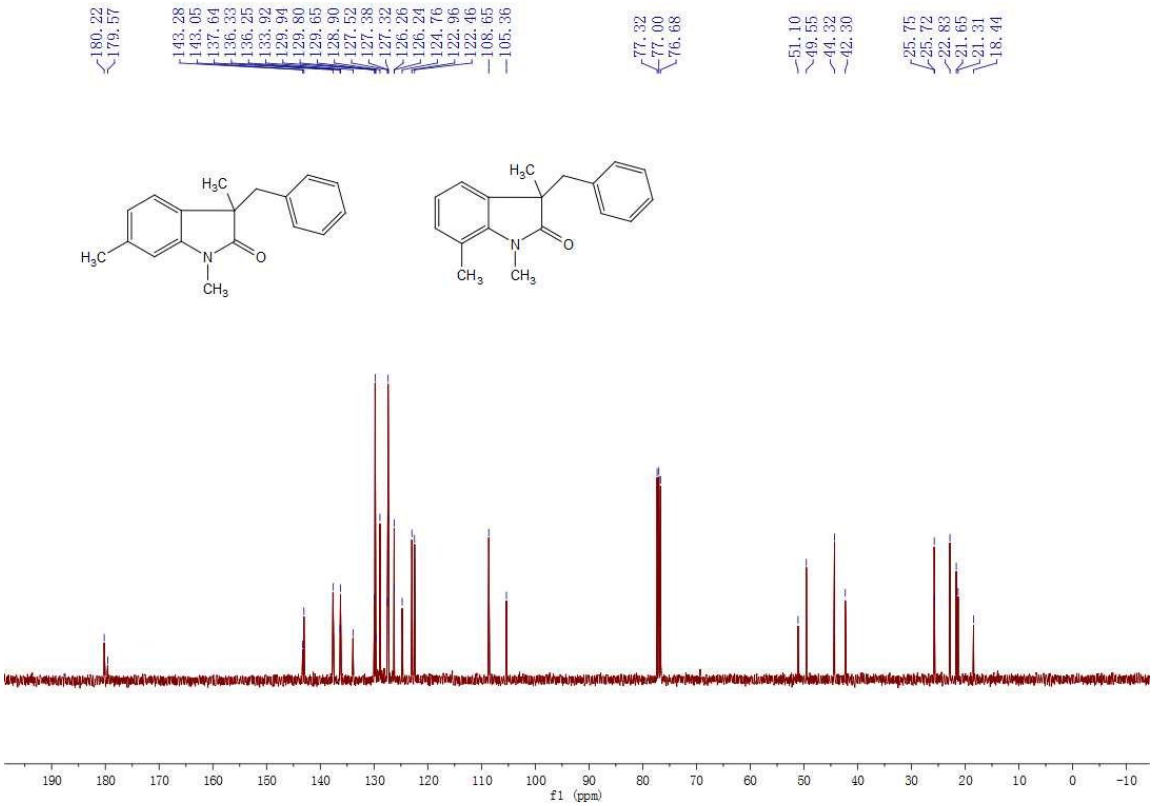
3-Benzyl-5-chloro-1,3-dimethylindolin-2-one (4g):



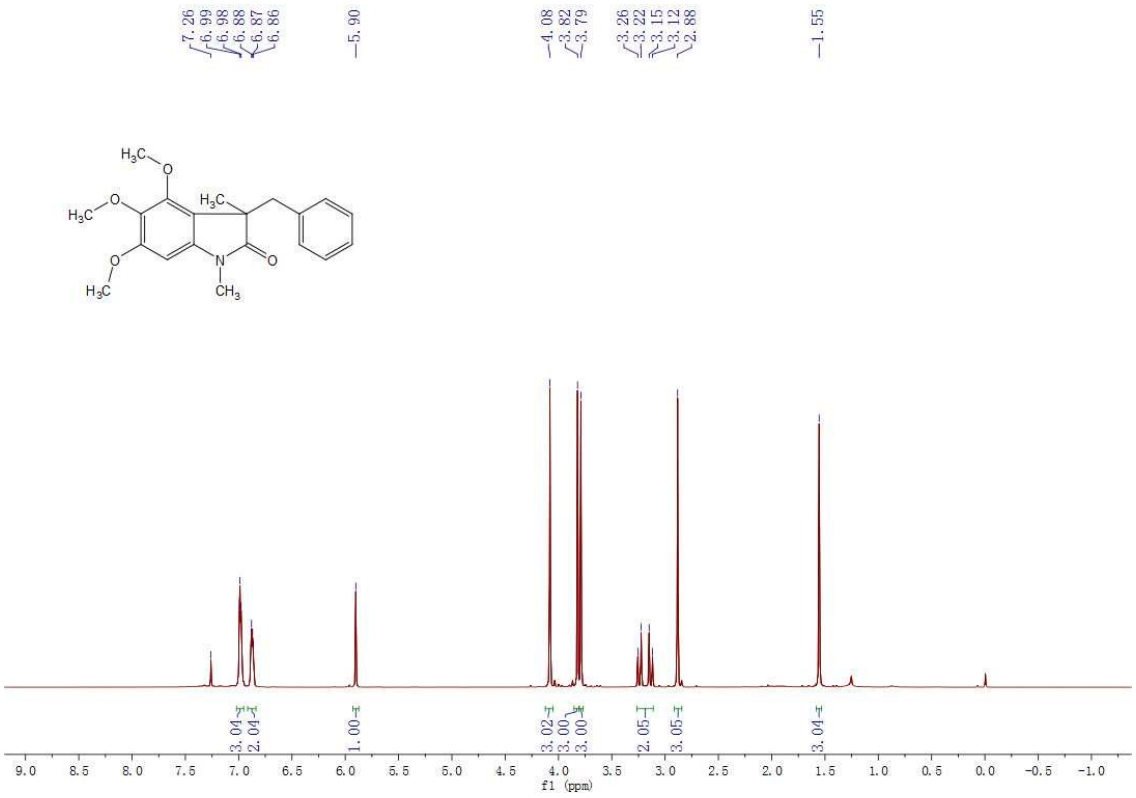


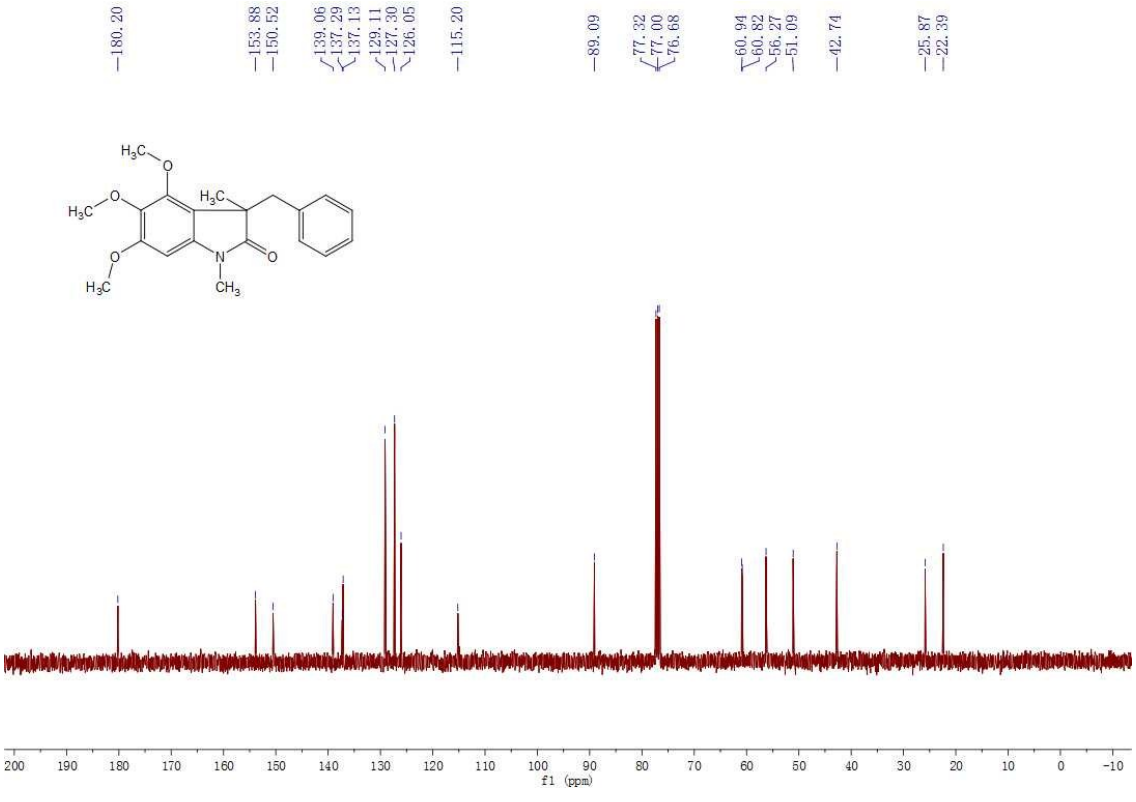
3-Benzyl-1,3,6-trimethylindolin-2-one (4h) and 3-benzyl-1,3,4-trimethylindolin-2-one (4h'):





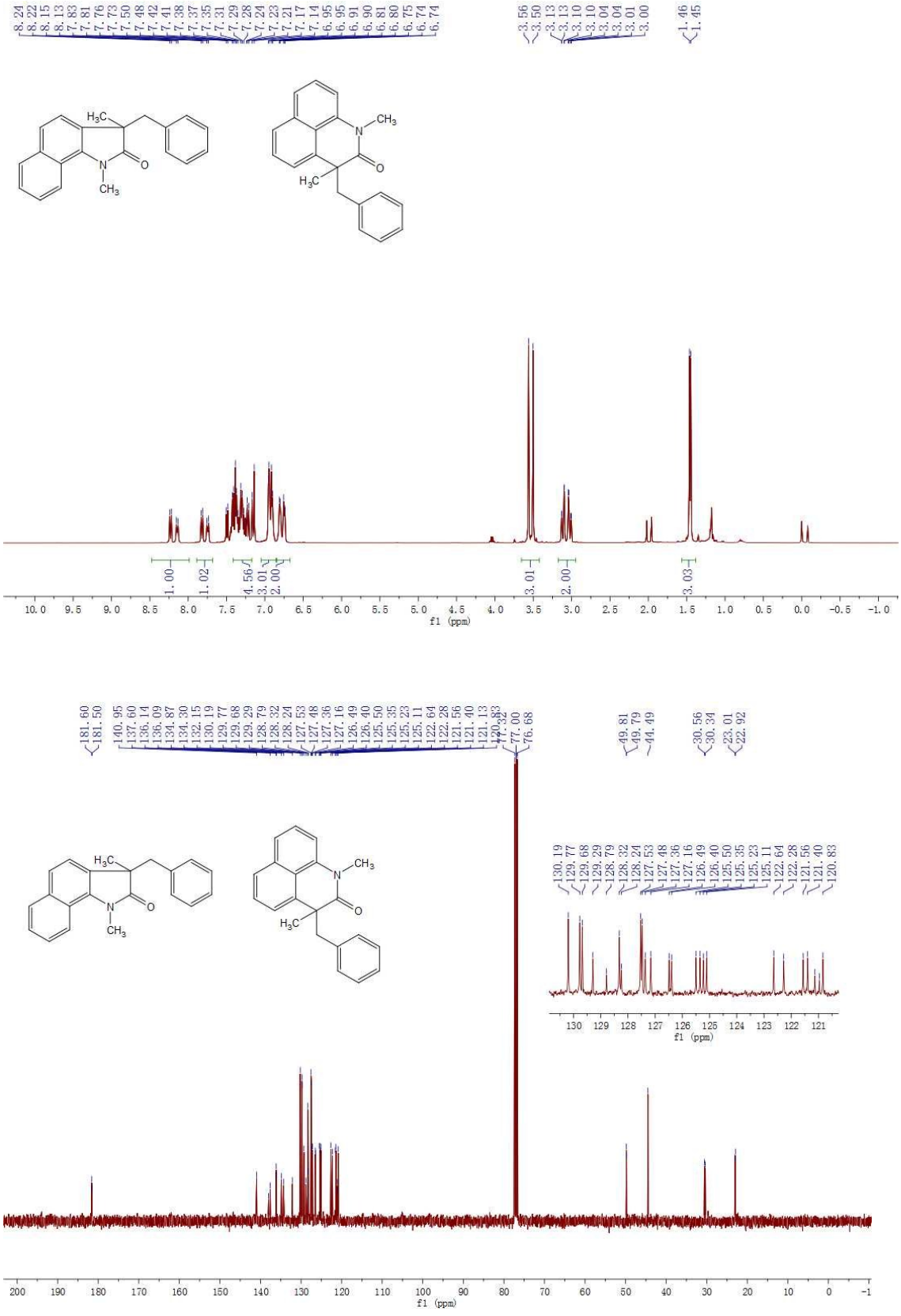
3-Benzyl-4,5,6-trimethoxy-1,3-dimethylindolin-2-one (4i):



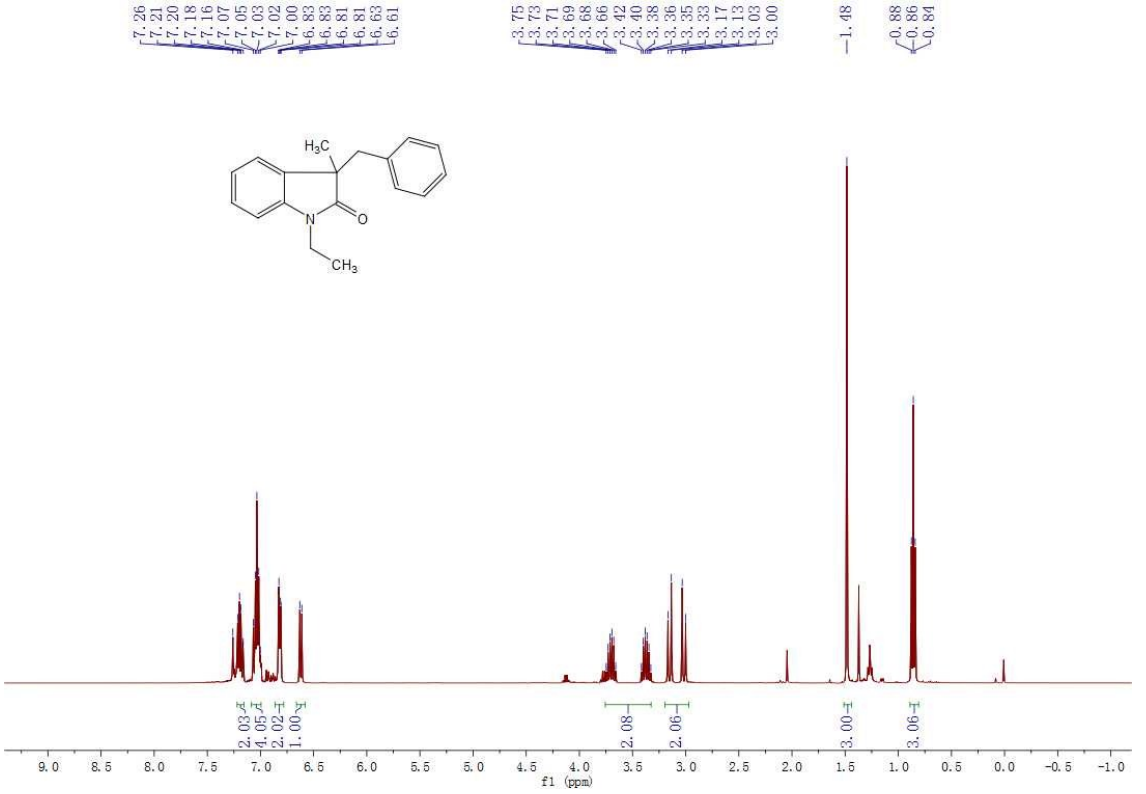


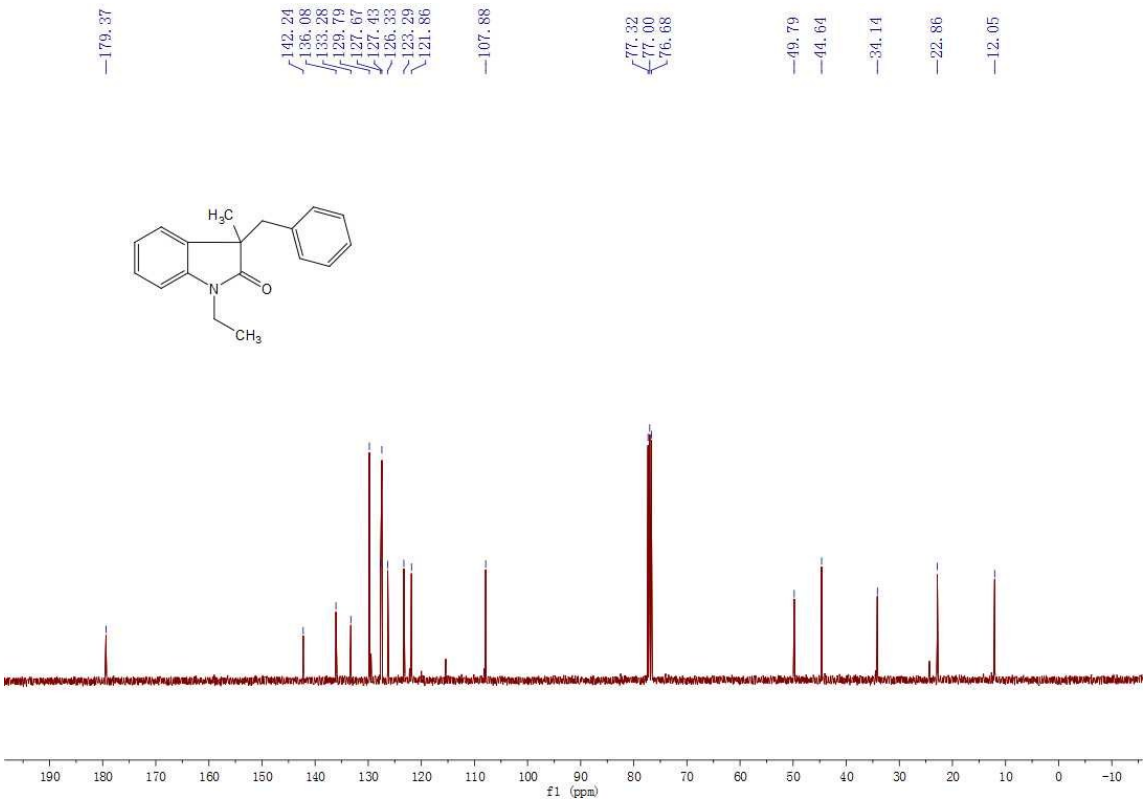
3-Benzyl-1,3-dimethyl-1*H*-benzo[*g*]indol-2(3*H*)-one (4j) and

3-Benzyl-1,3-dimethyl-1*H*-benzo[*de*]quinolin-2(3*H*)-one (4j'):

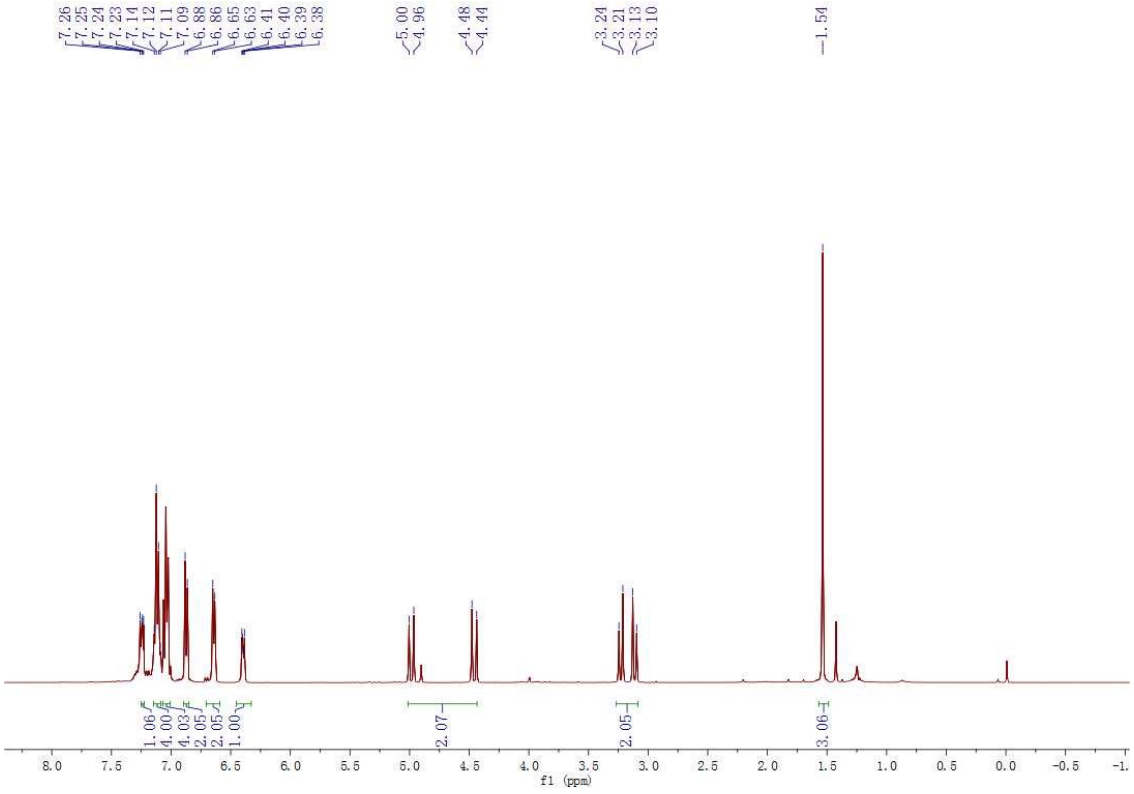


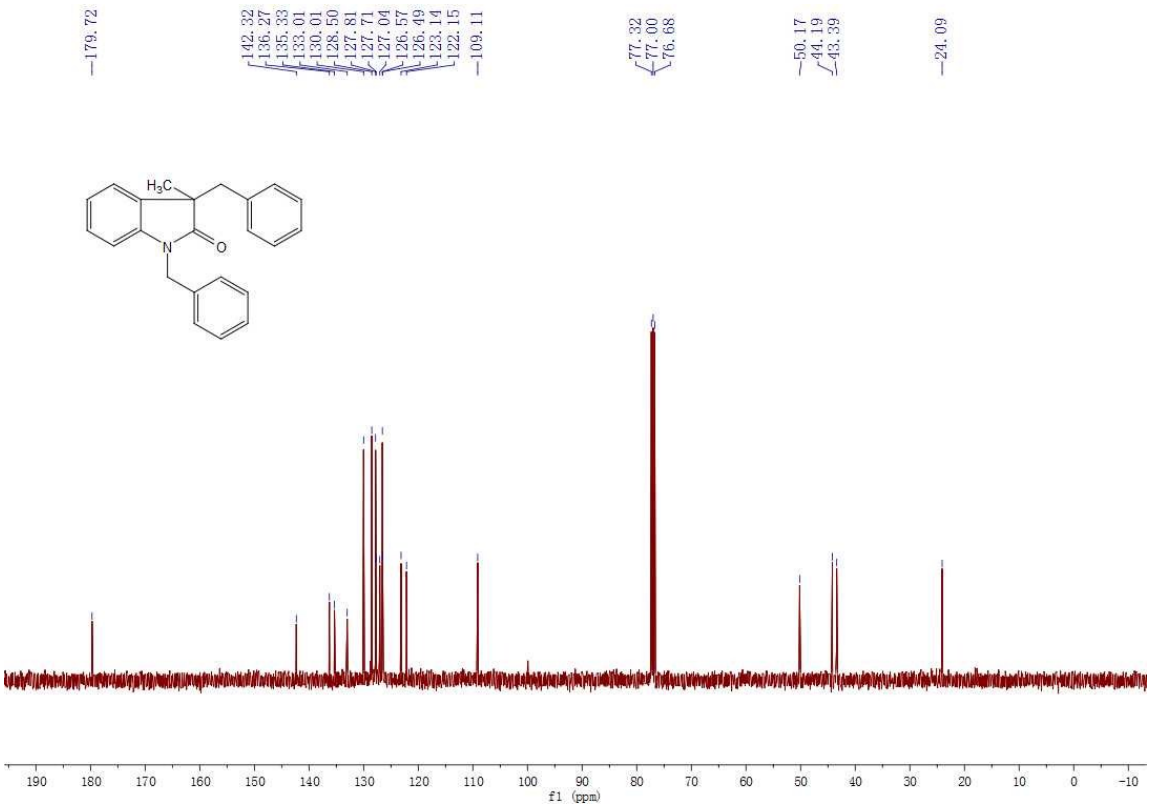
3-Benzyl-1-ethyl-3-methylindolin-2-one (4k):



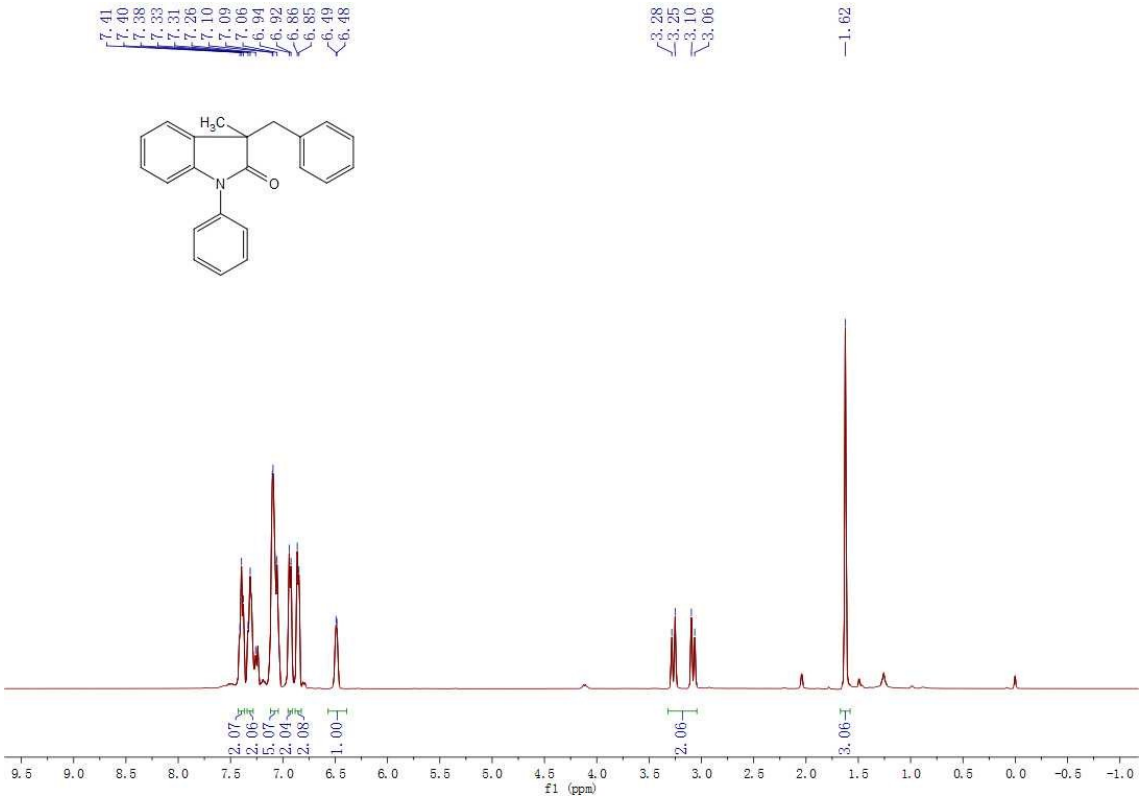


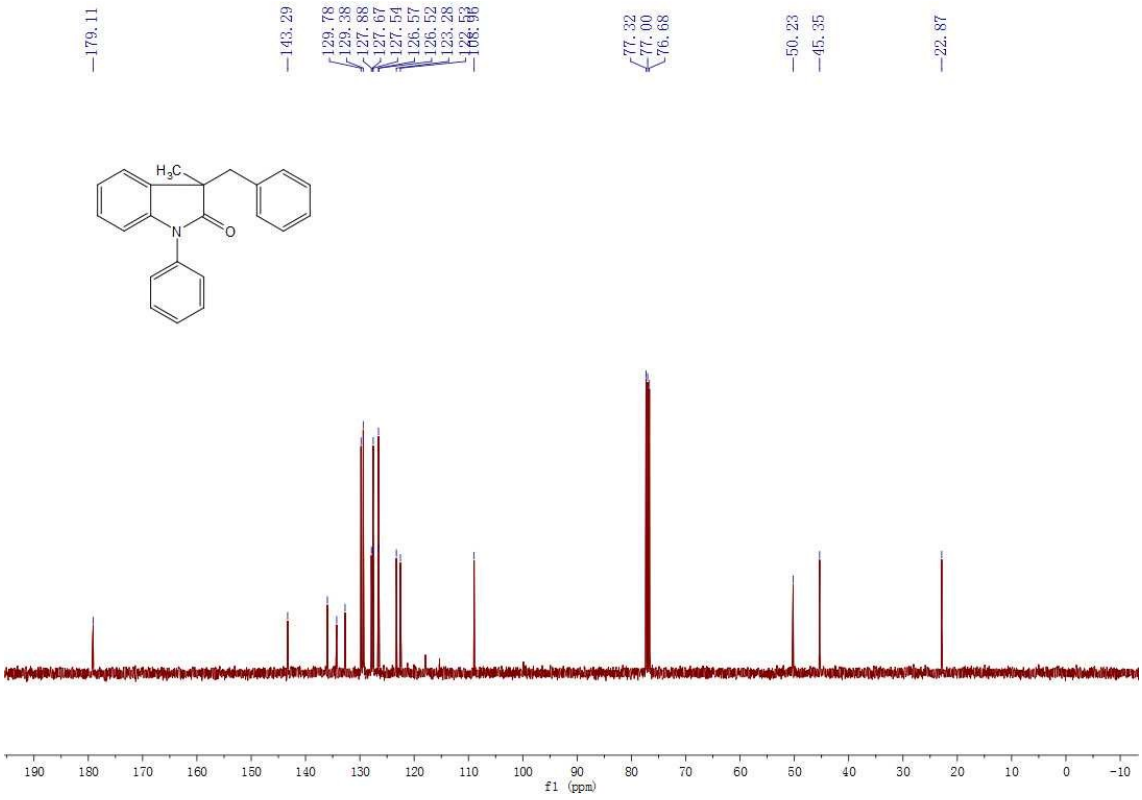
1,3-Dibenzyl-3-methylindolin-2-one (4l):



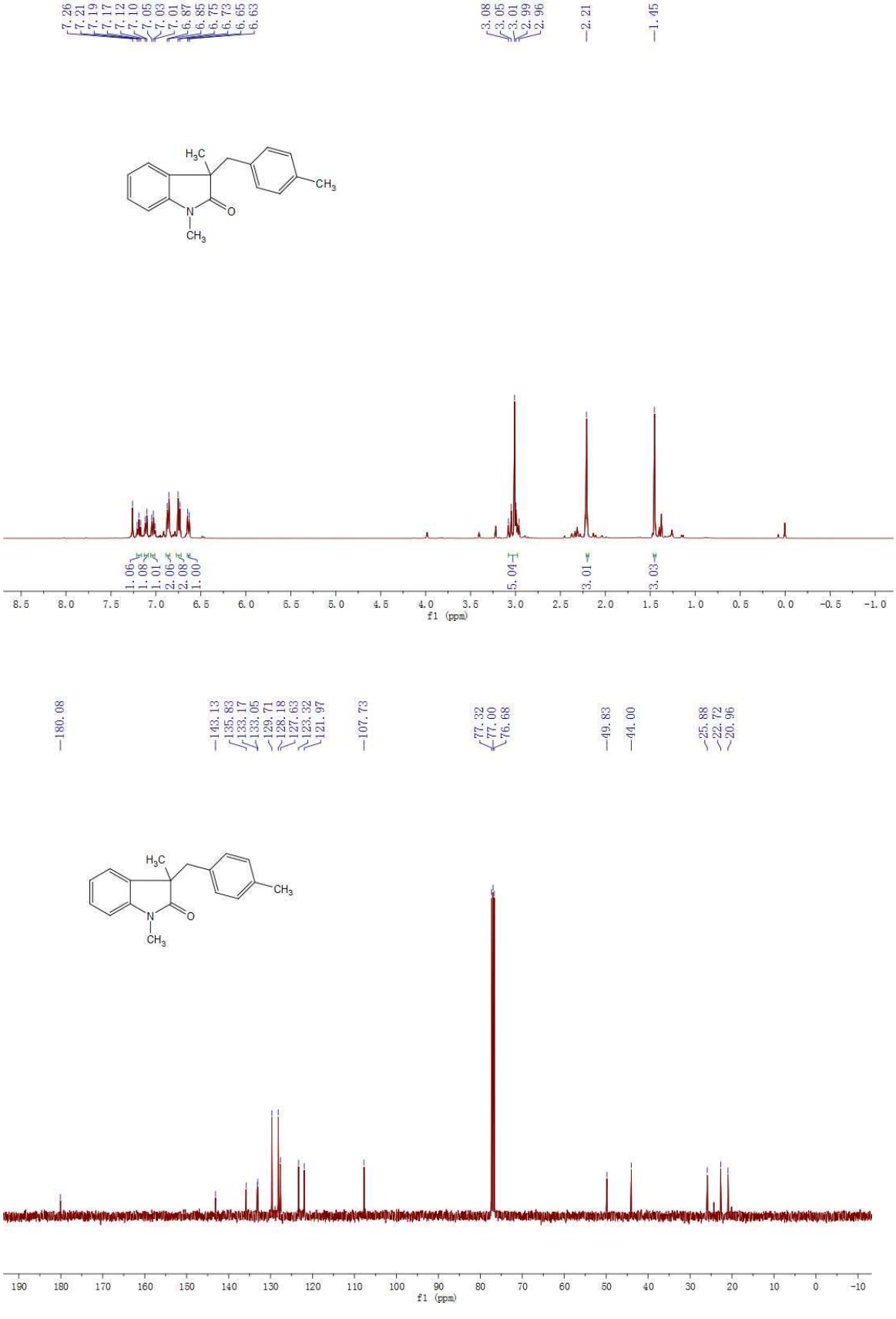


3-Benzyl-3-methyl-1-phenylindolin-2-one (4m):

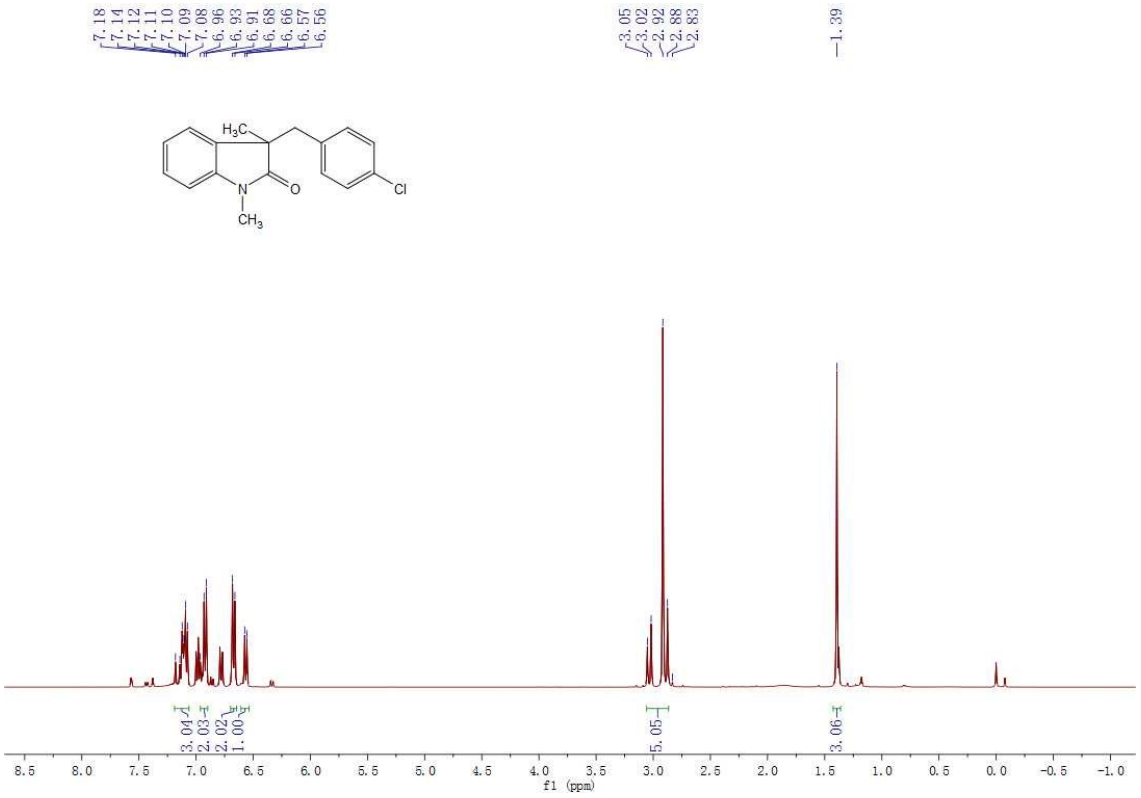


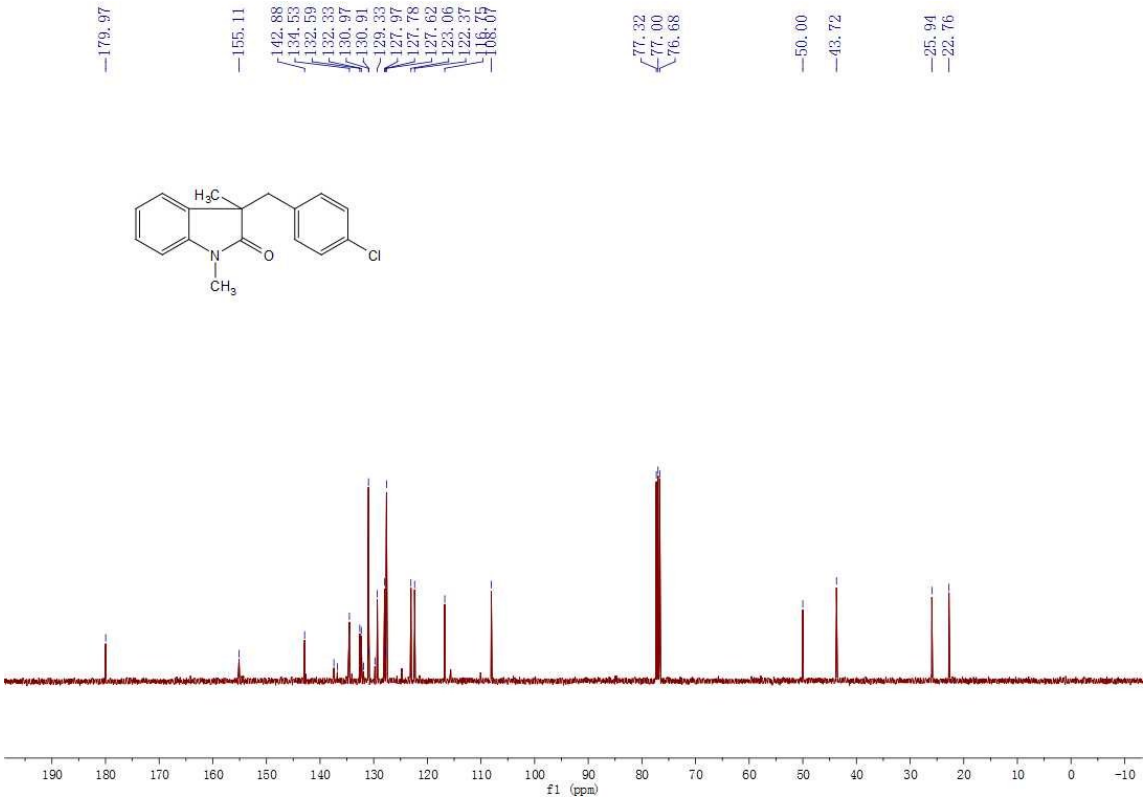


1,3-Dimethyl-3-(4-methylbenzyl)indolin-2-one (4n):

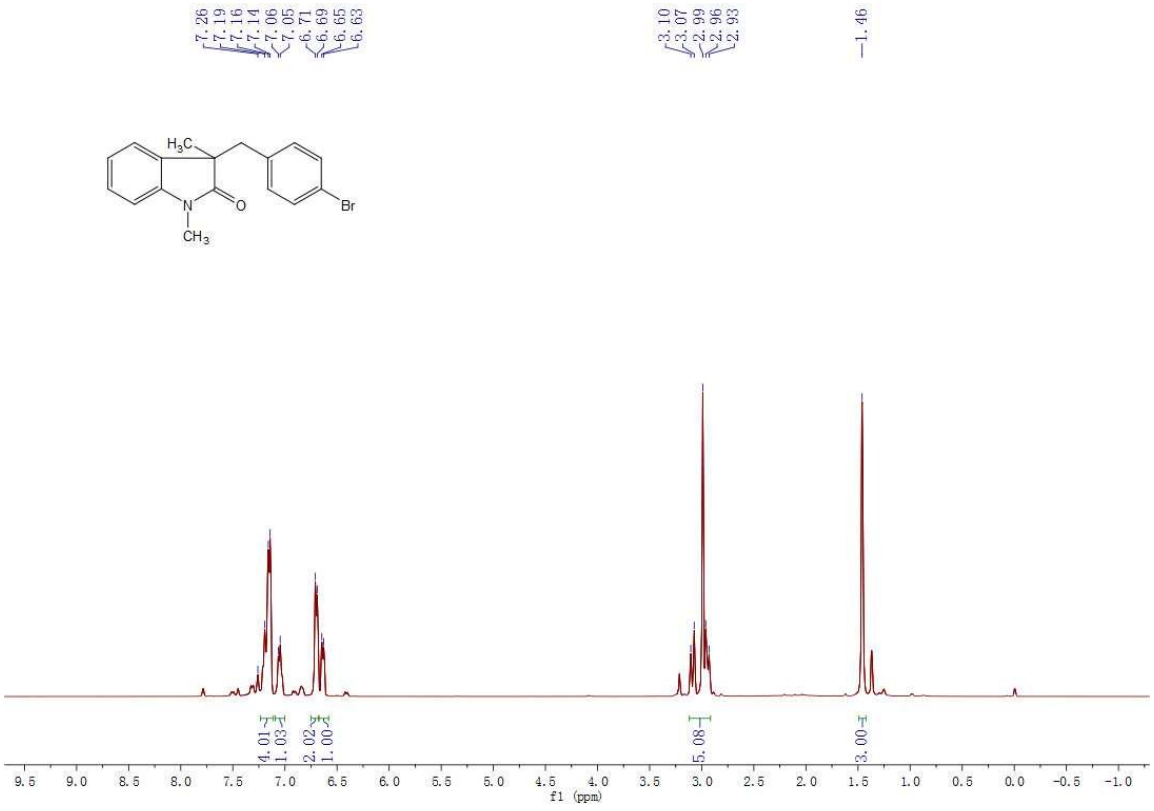


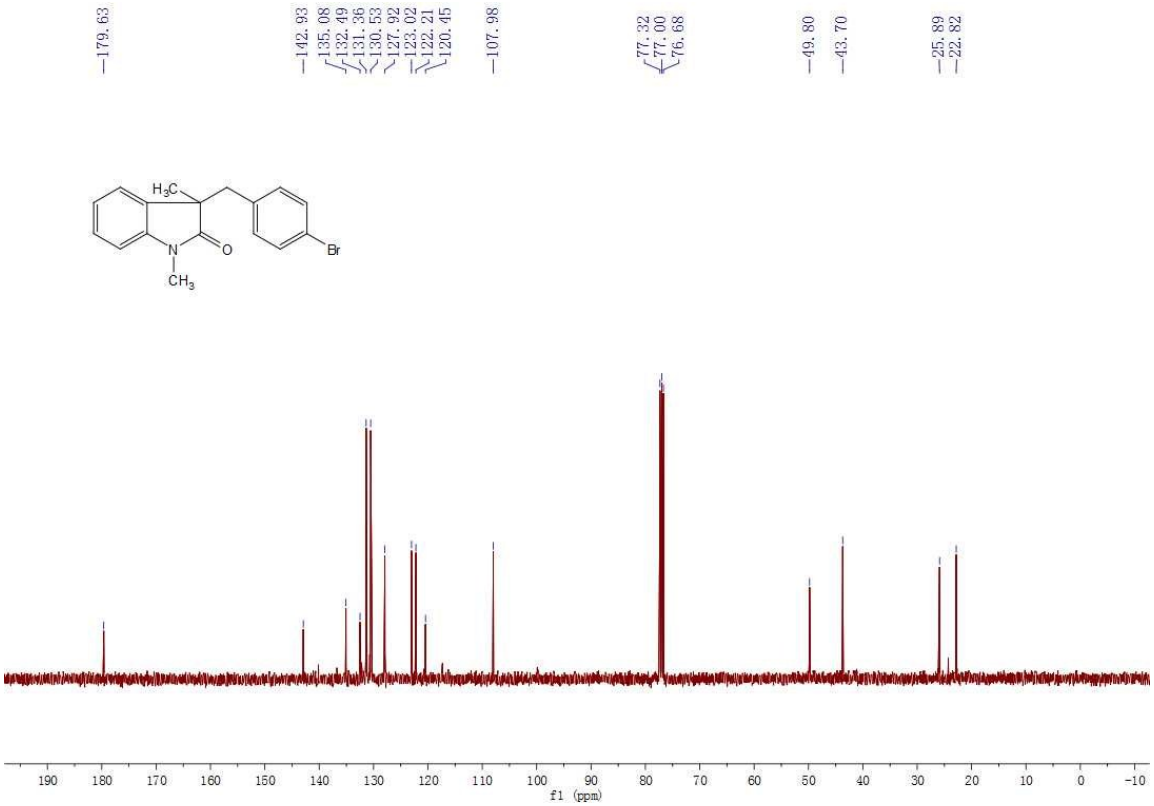
3-(4-Chlorobenzyl)-1,3-dimethylindolin-2-one (4o):



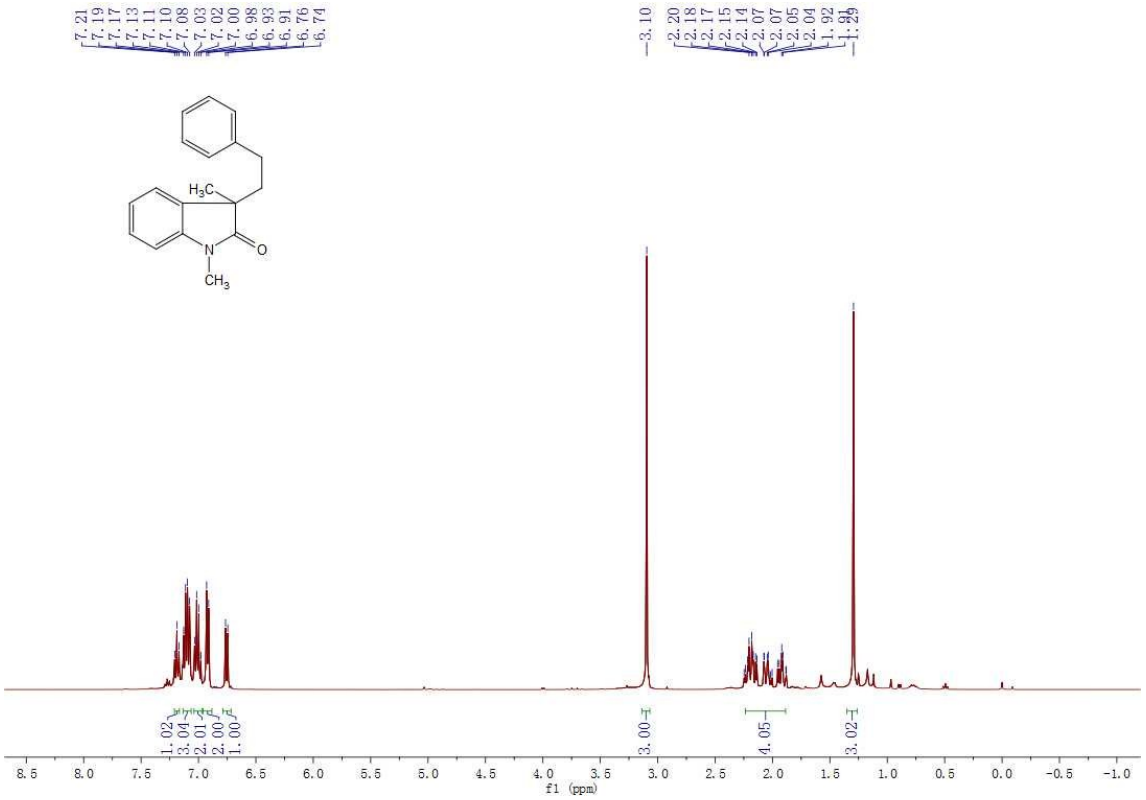


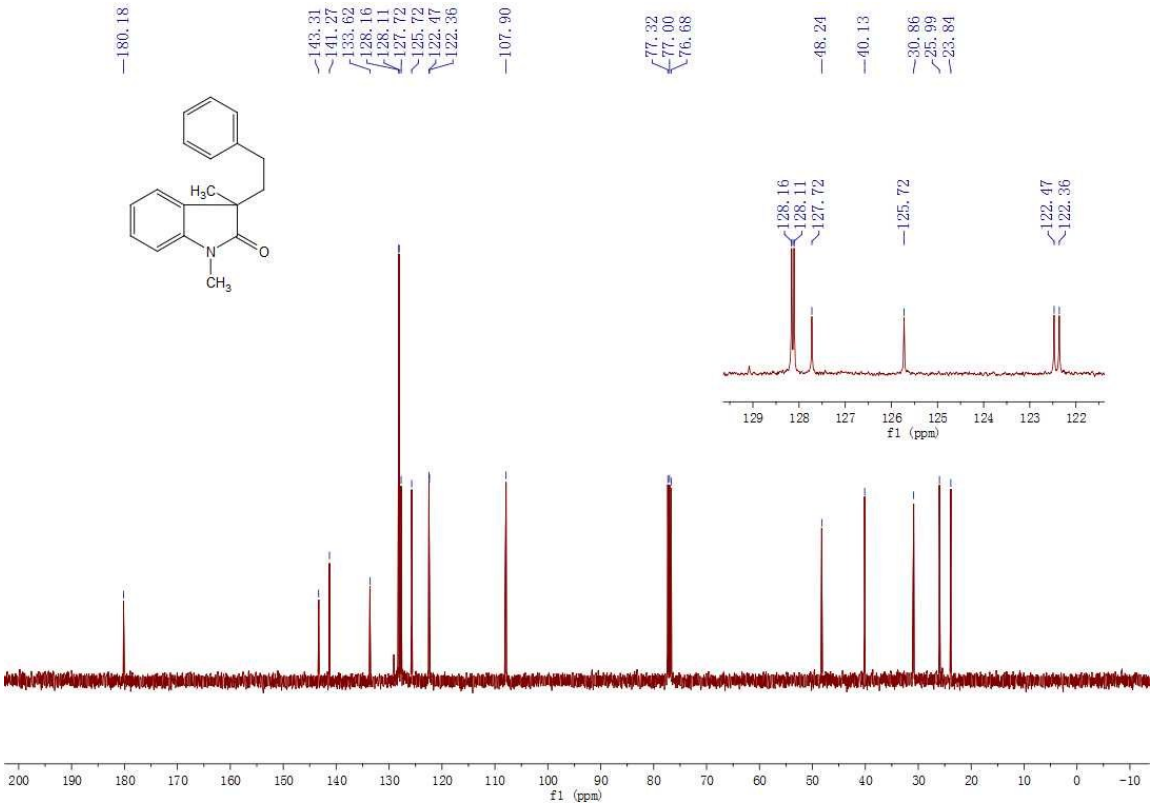
3-(4-Bromobenzyl)-1,3-dimethylindolin-2-one (4p):



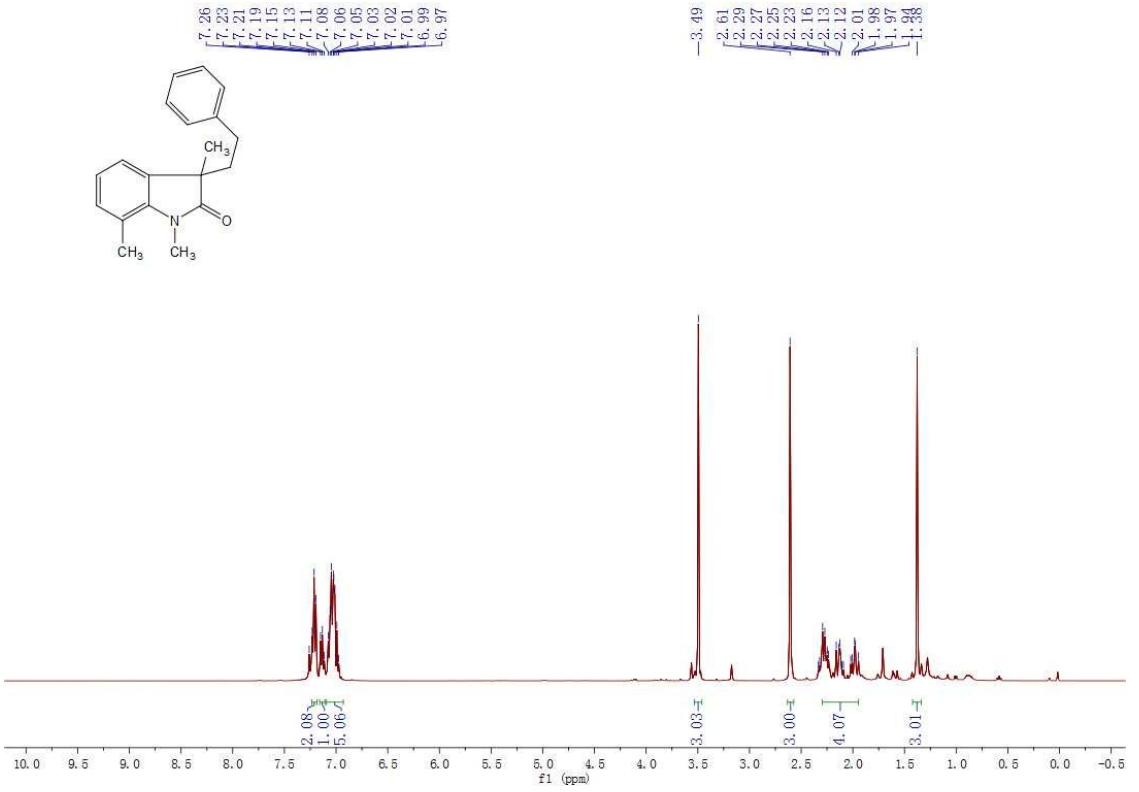


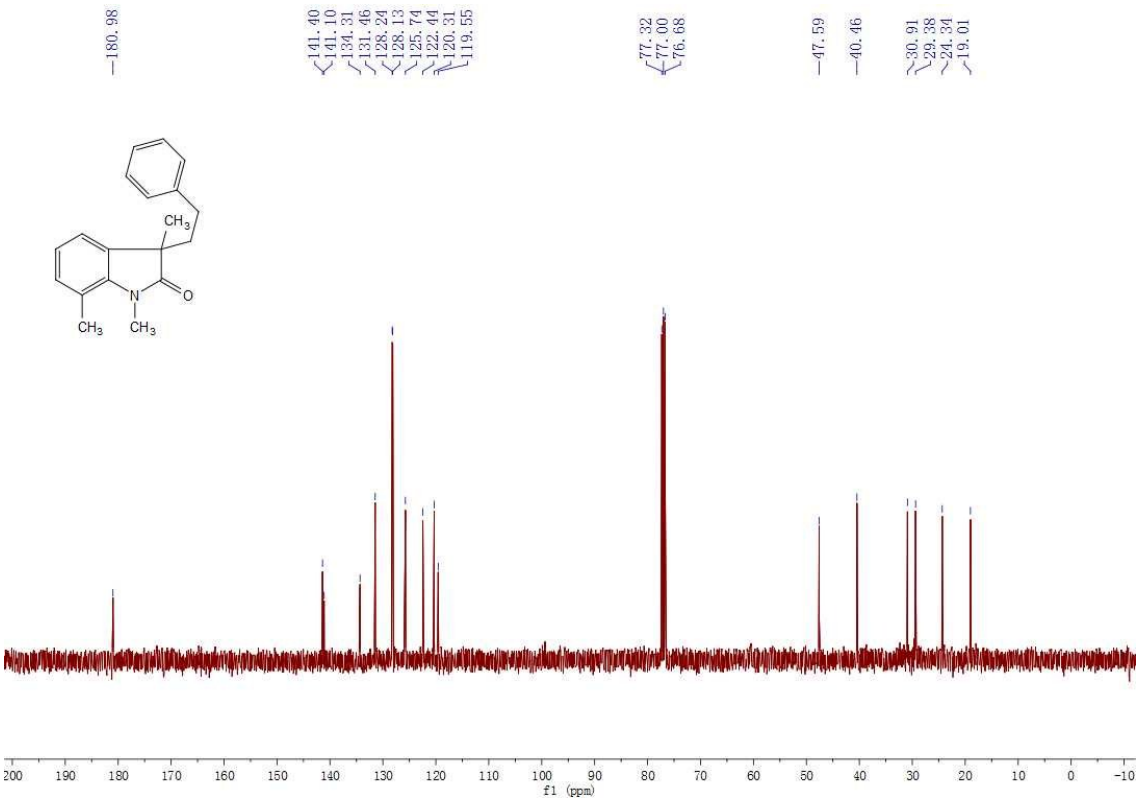
1,3-Dimethyl-3-phenethylindolin-2-one (5a):



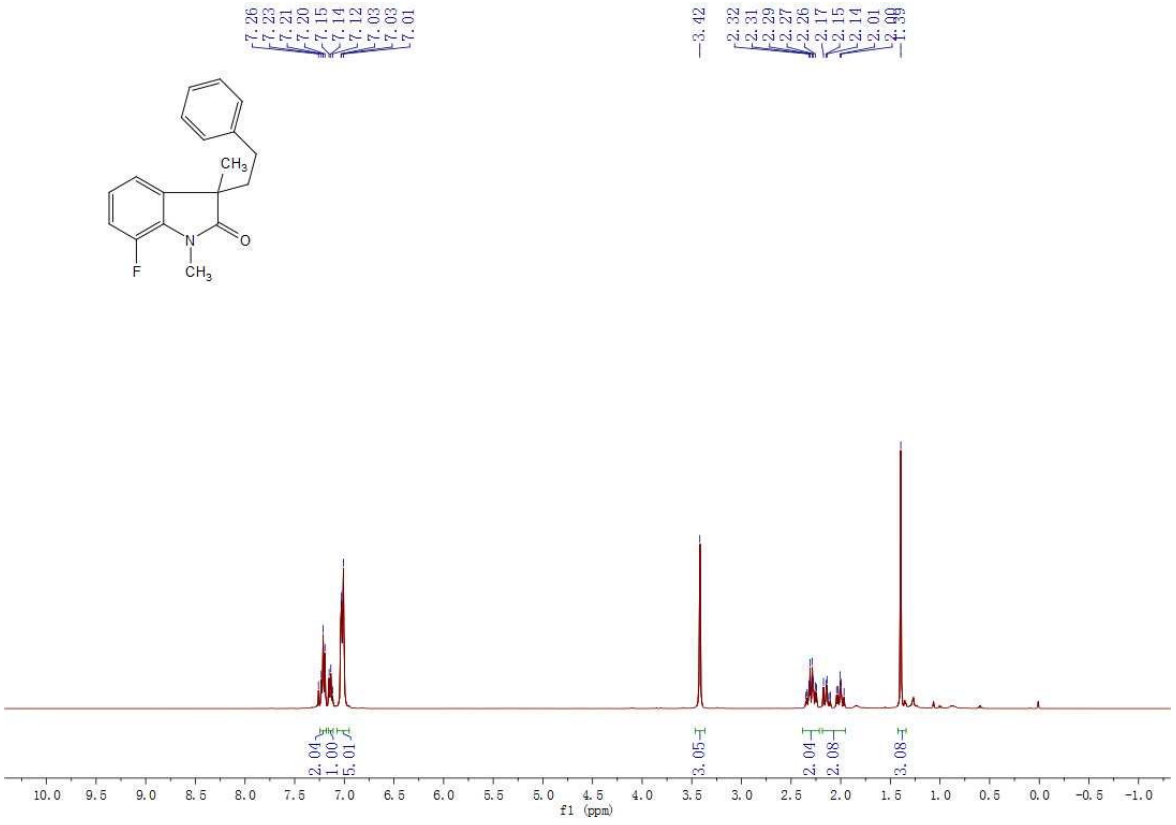


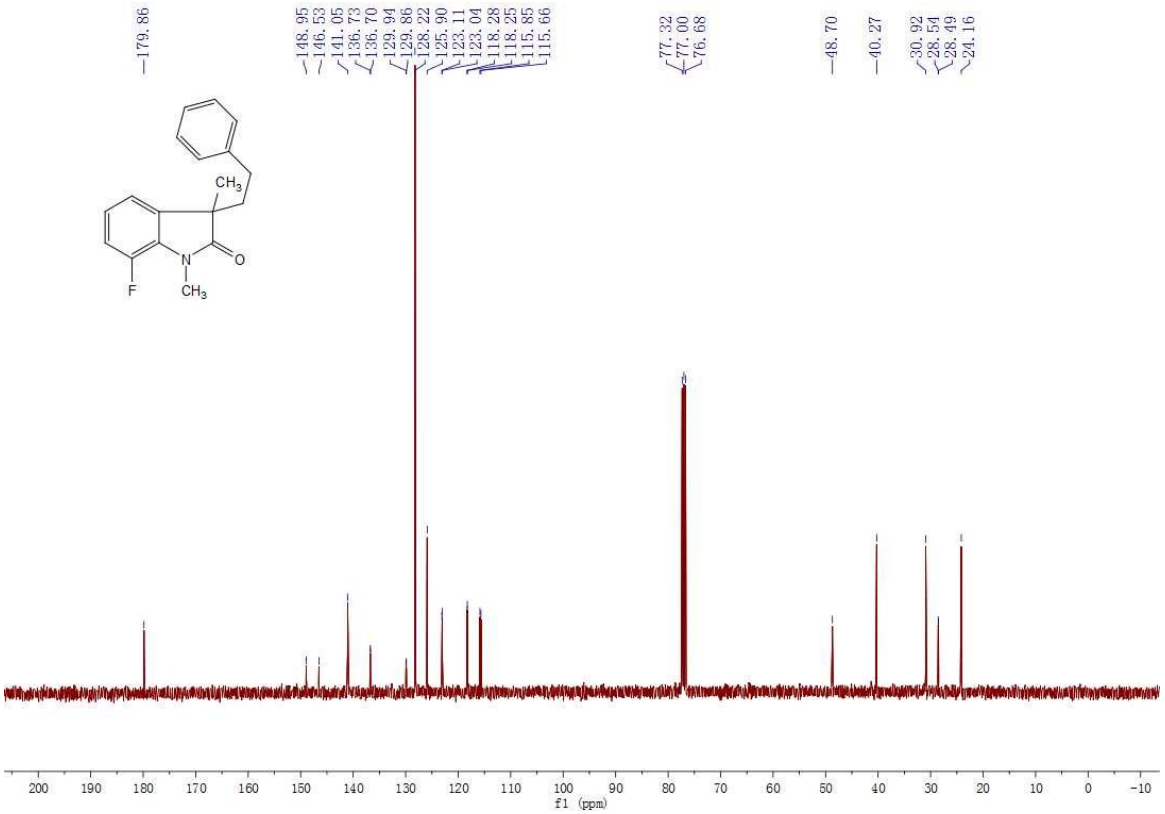
1,3,7-Trimethyl-3-phenethylindolin-2-one (5b):



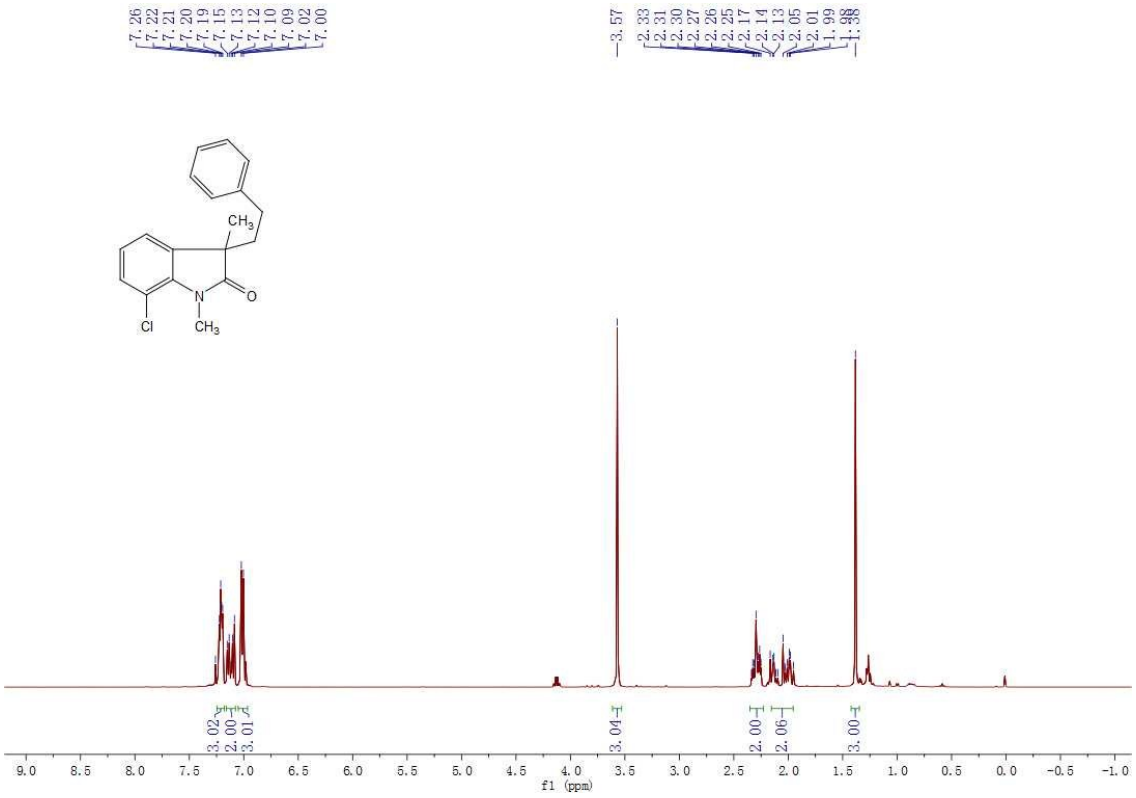


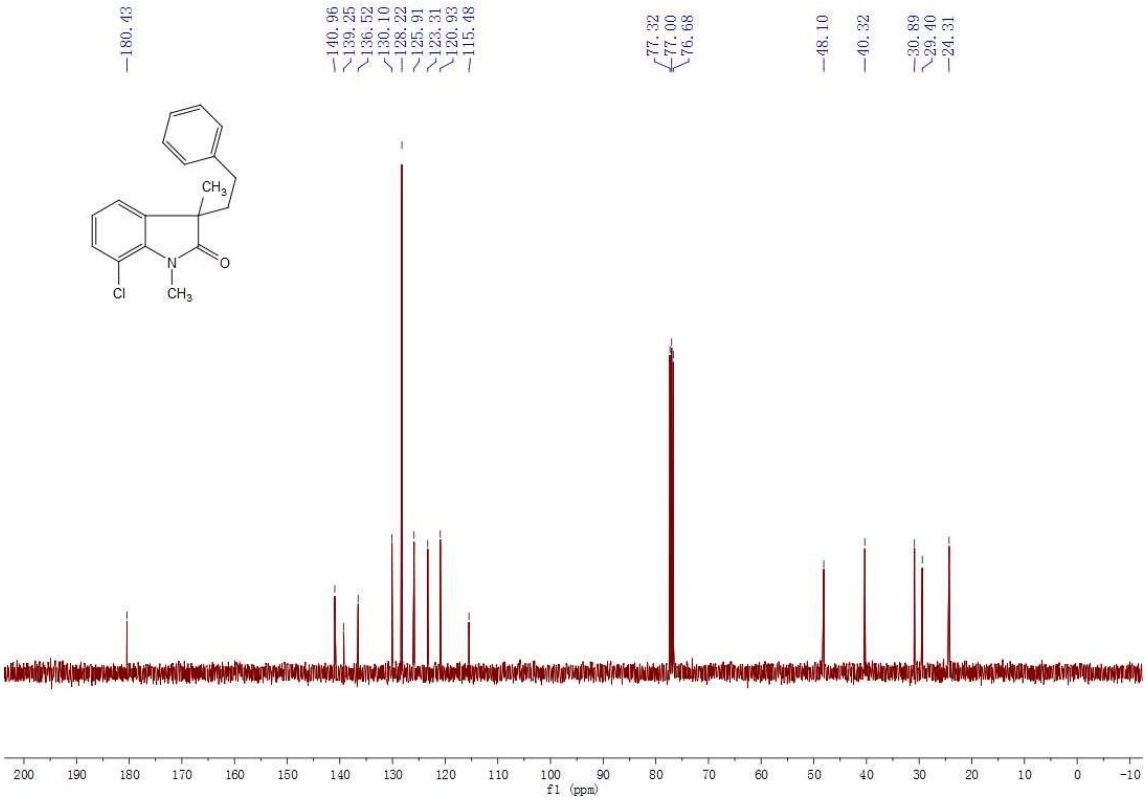
7-Fluoro-1,3-dimethyl-3-phenethylindolin-2-one (5c):



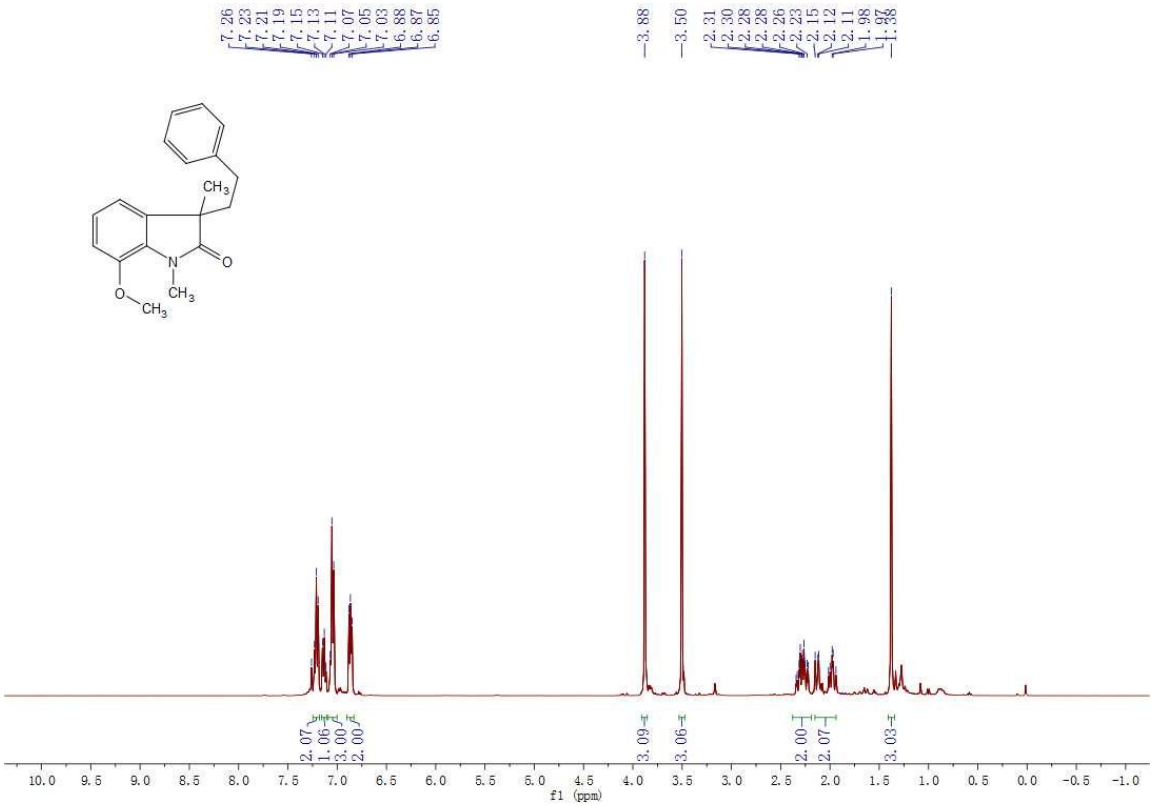


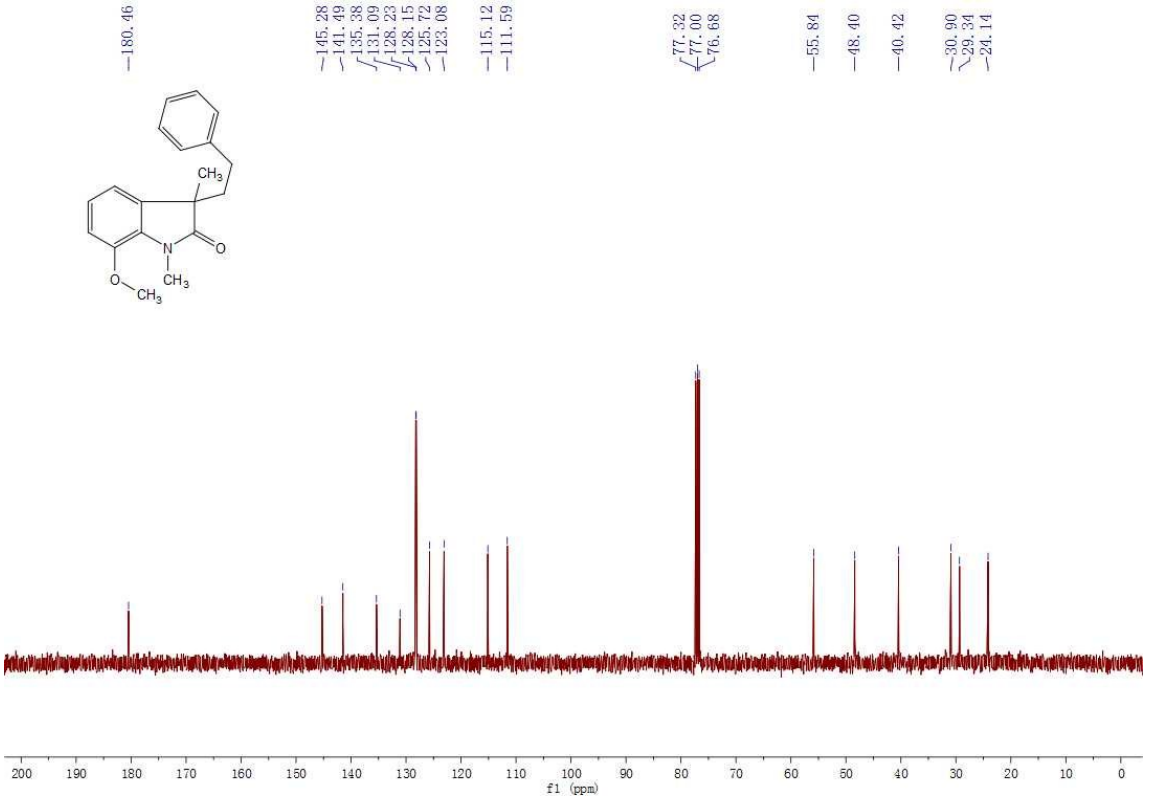
7-Chloro-1,3-dimethyl-3-phenethylindolin-2-one (5d):



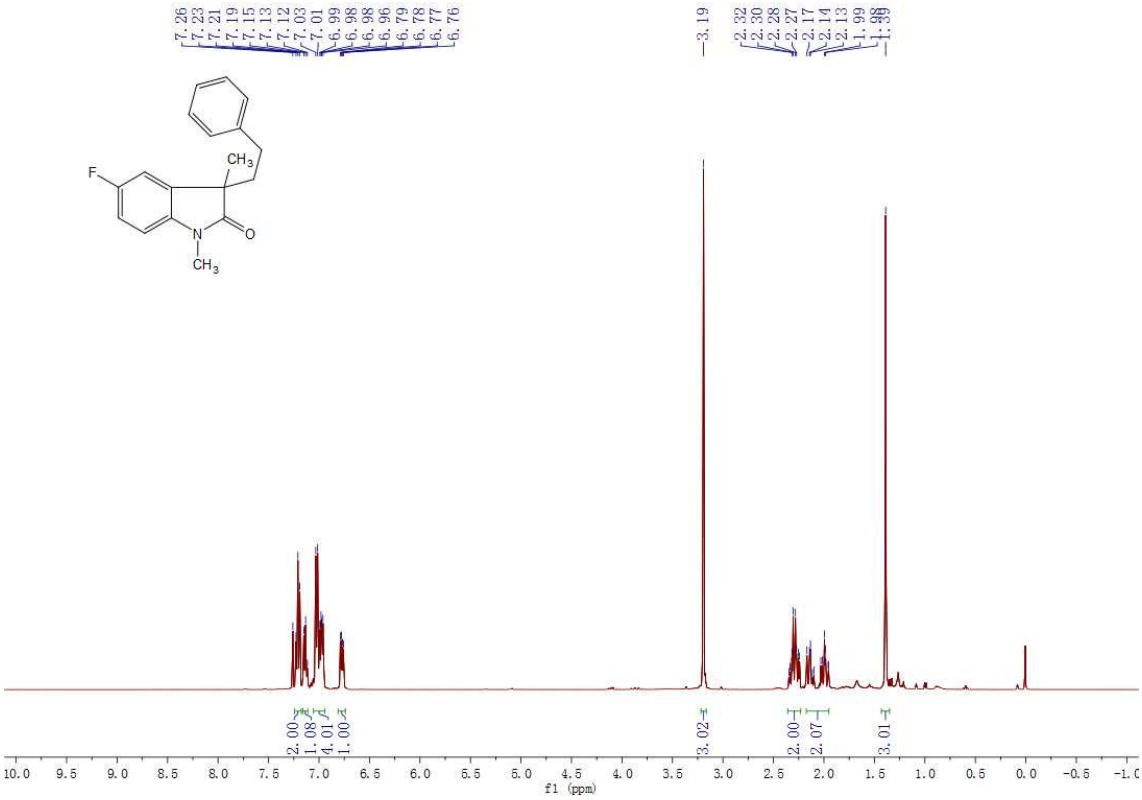


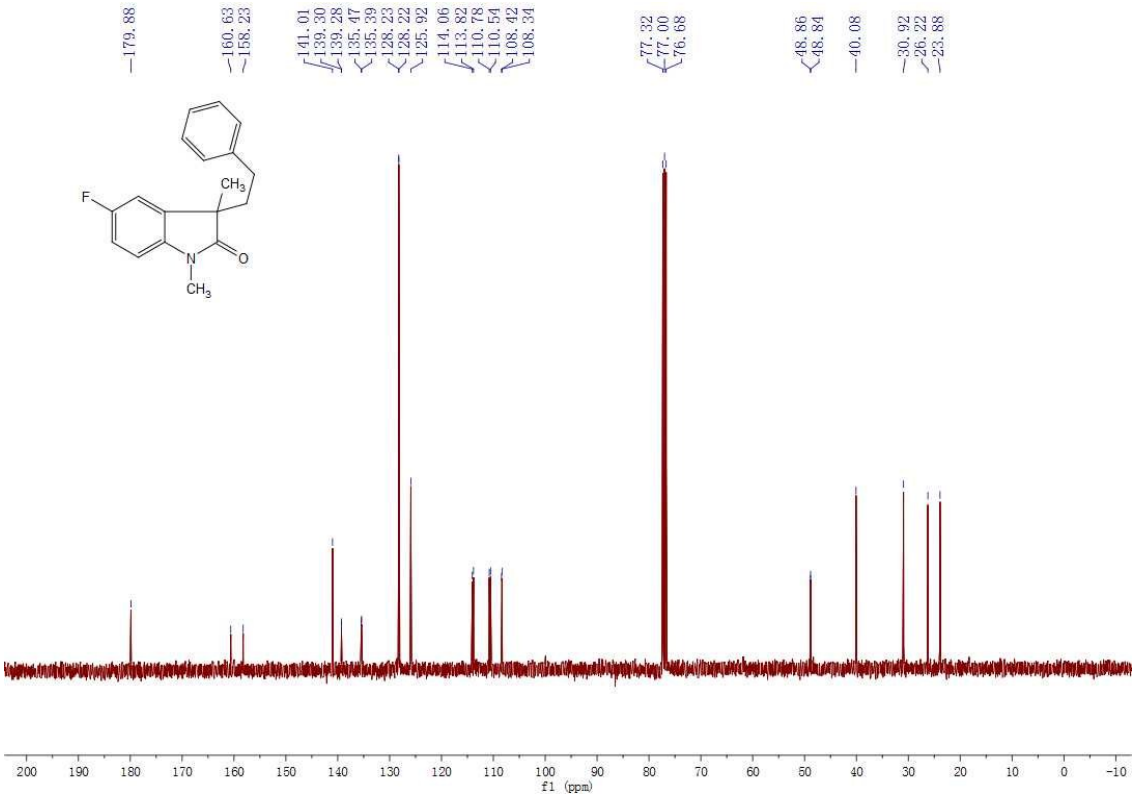
7-Methoxy-1,3-dimethyl-3-phenethylindolin-2-one (5e):



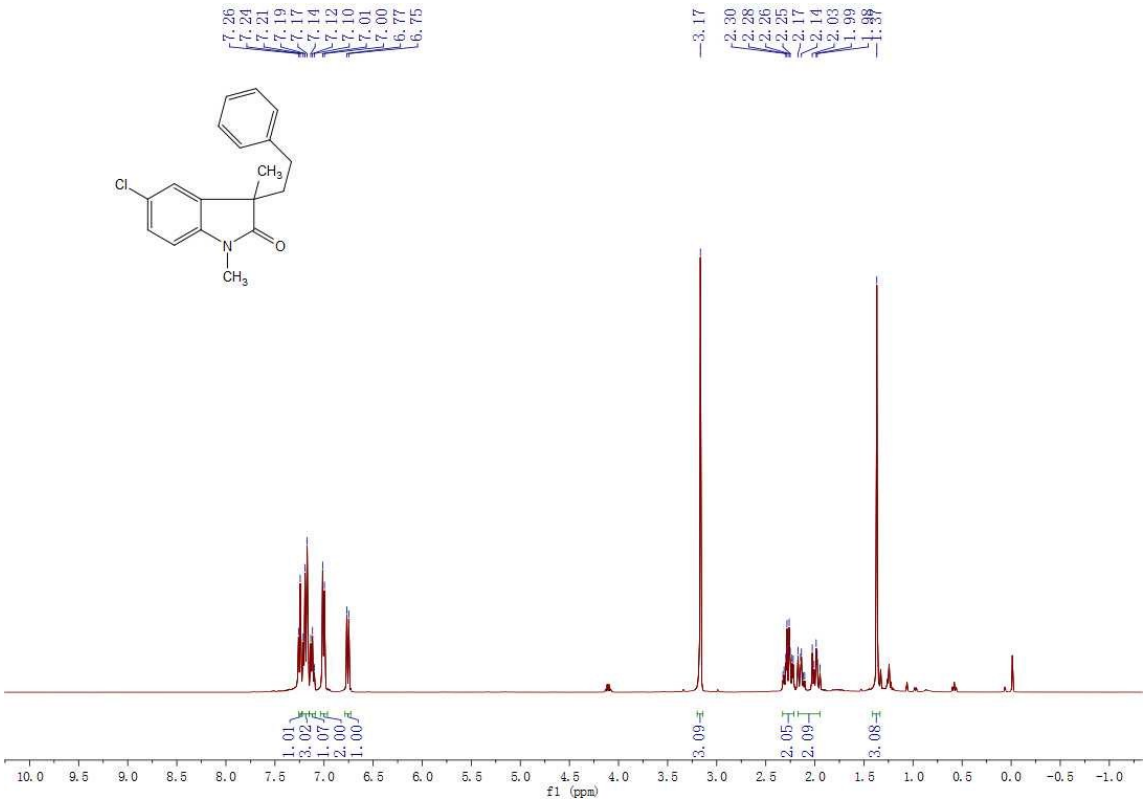


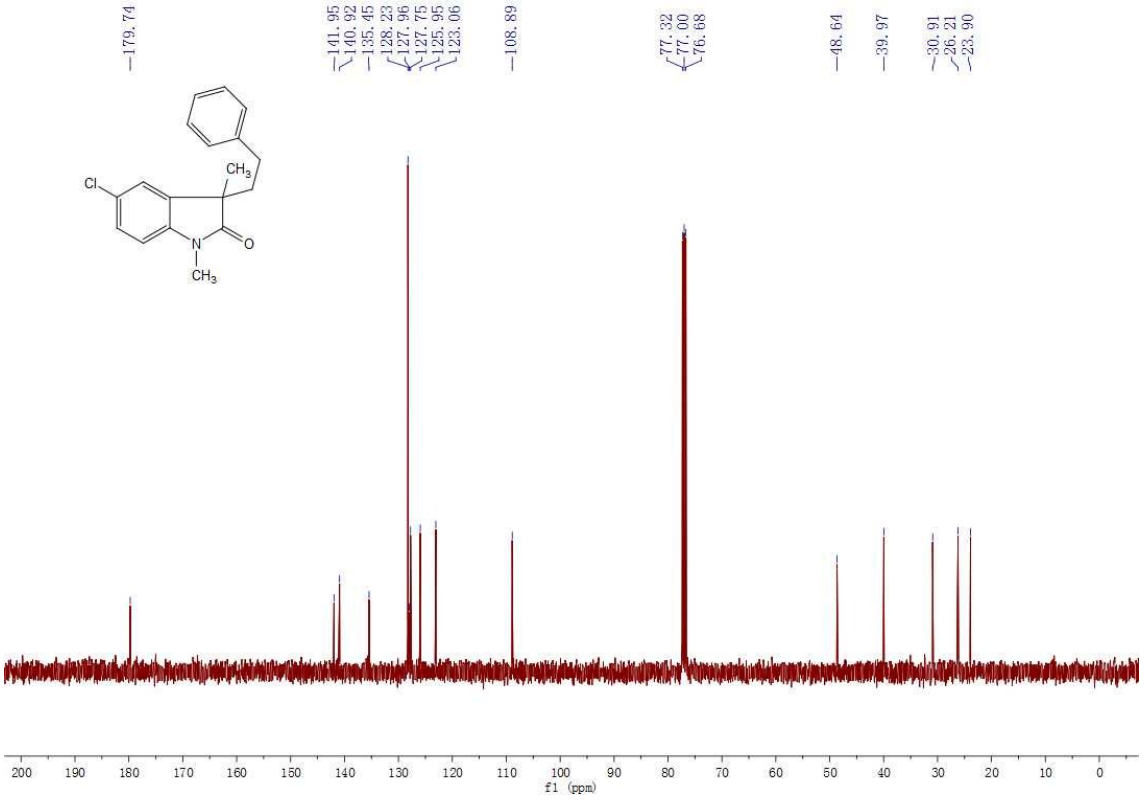
5-Fluoro-1,3-dimethyl-3-phenethylindolin-2-one (5f):



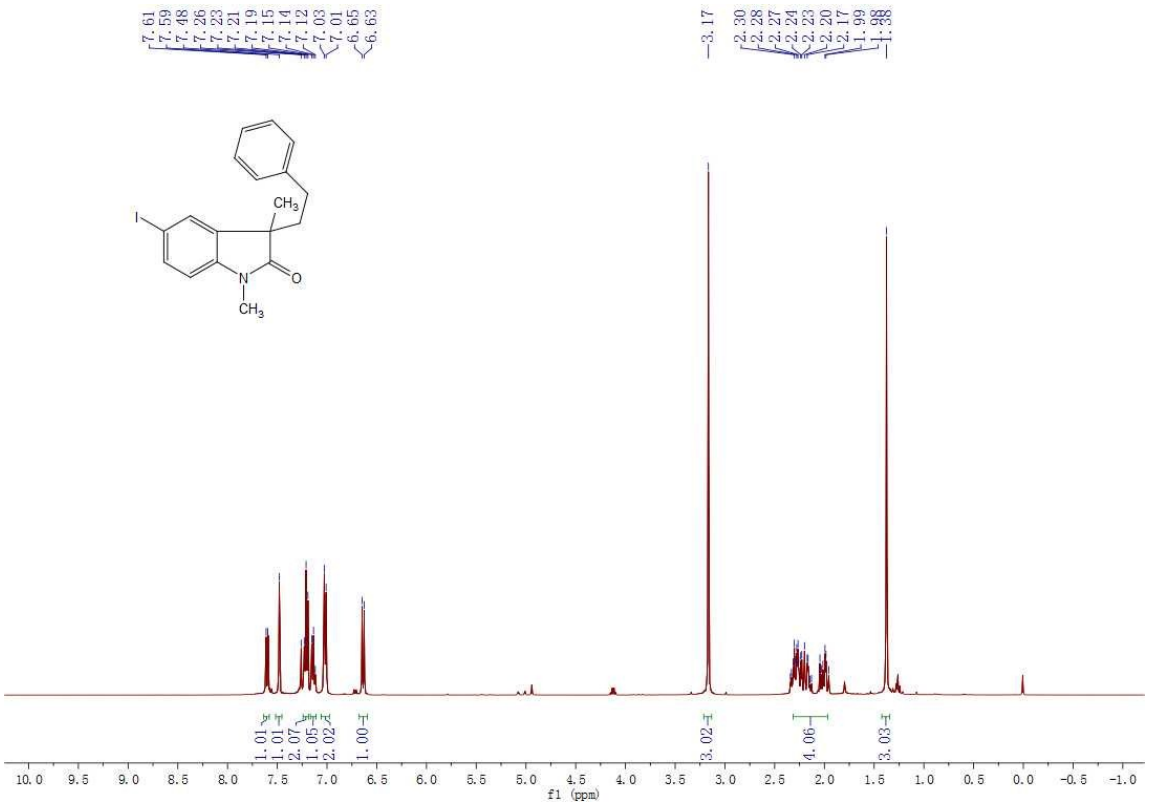


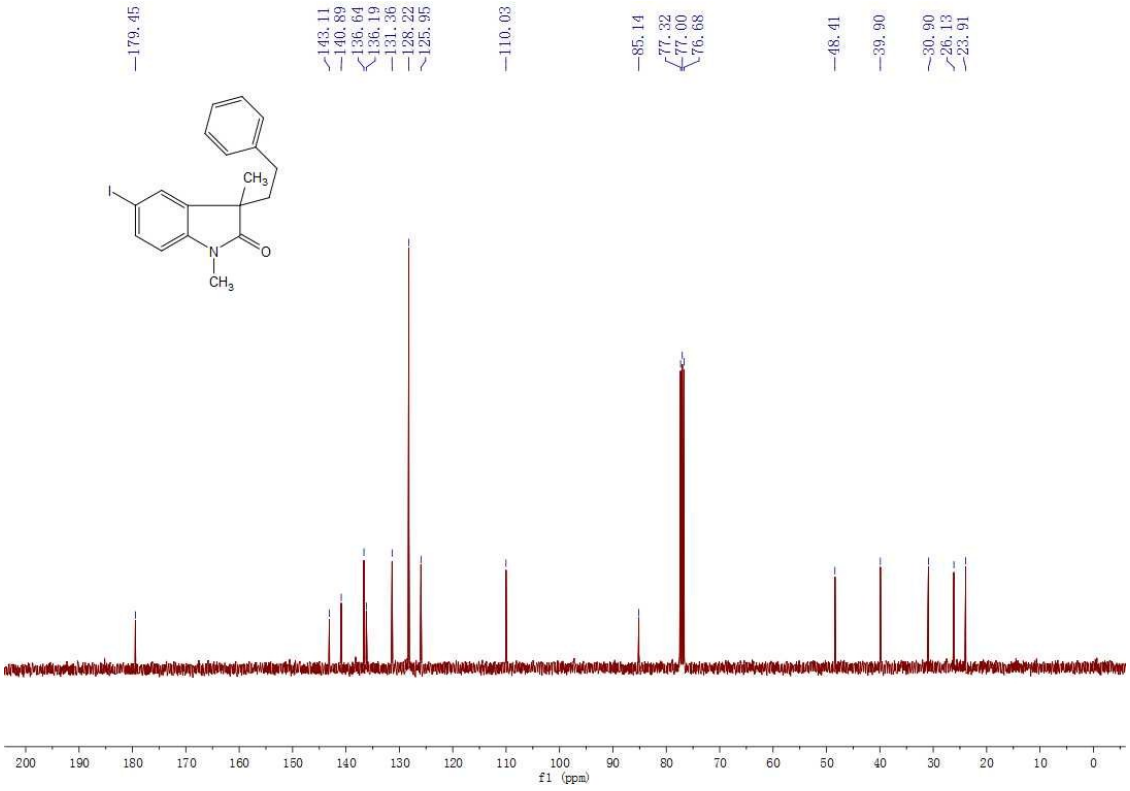
5-Chloro-1,3-dimethyl-3-phenethylindolin-2-one (5g):



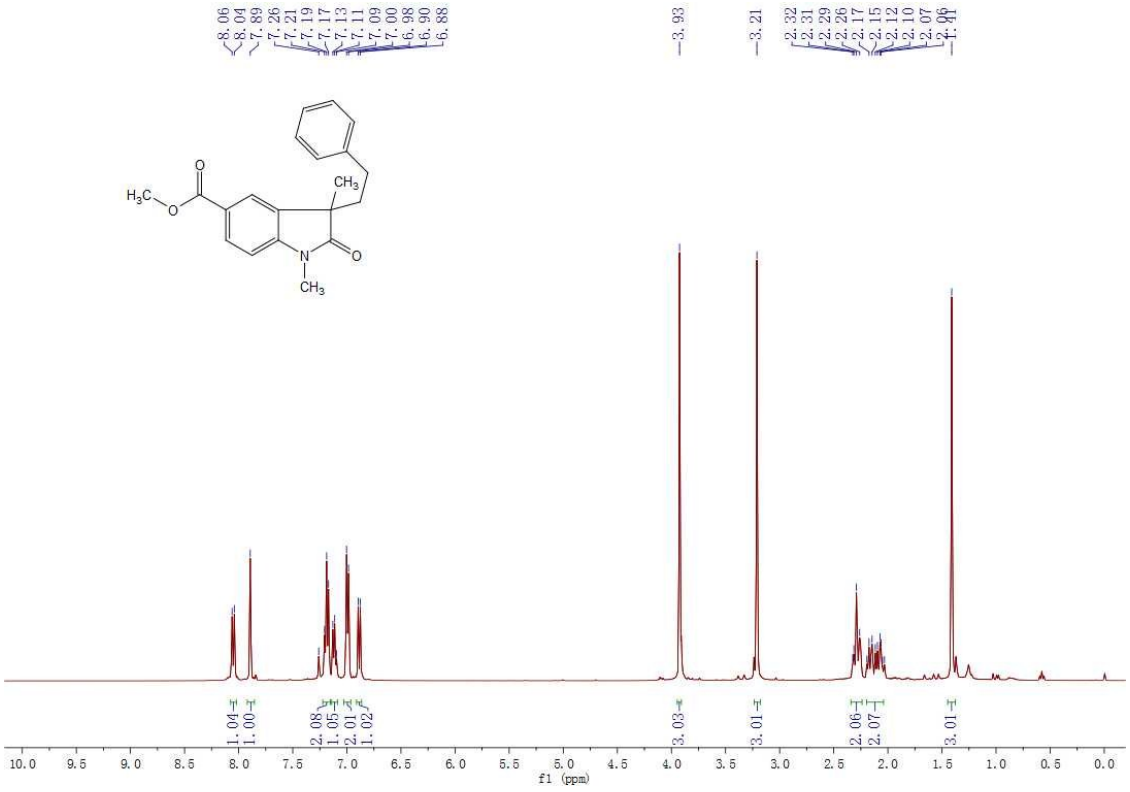


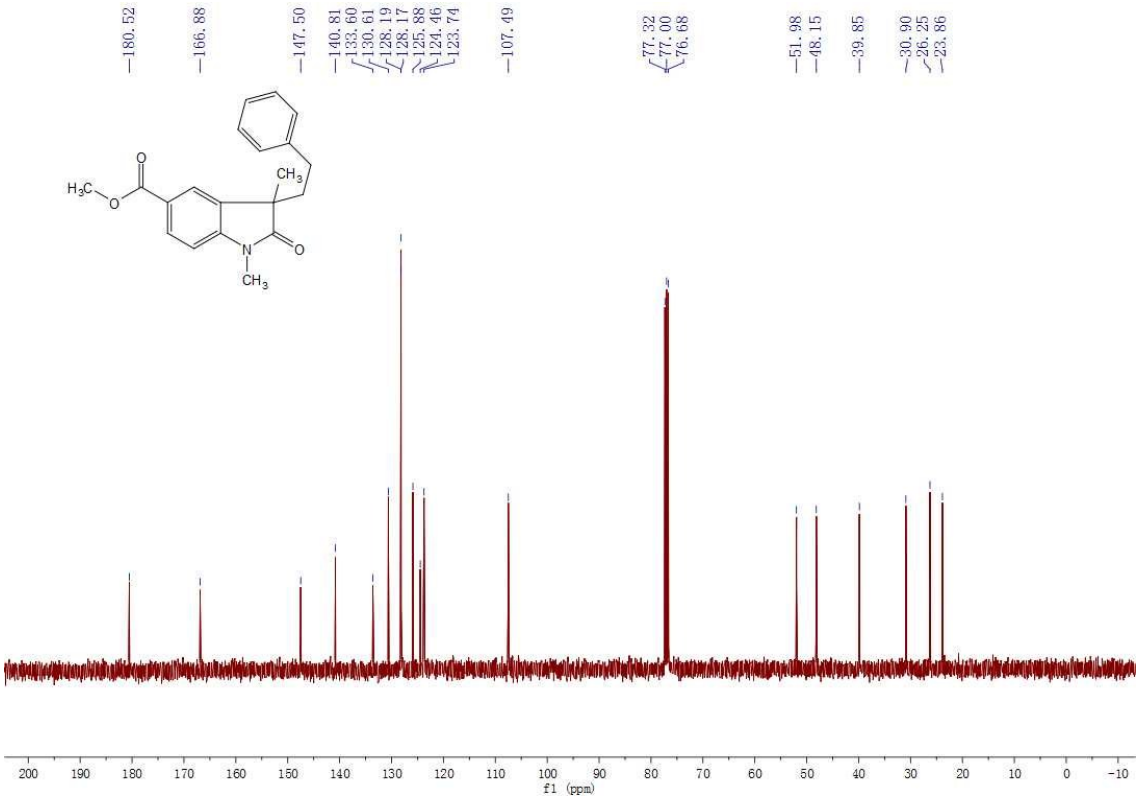
5-Iodo-1,3-dimethyl-3-phenethylindolin-2-one (5h):



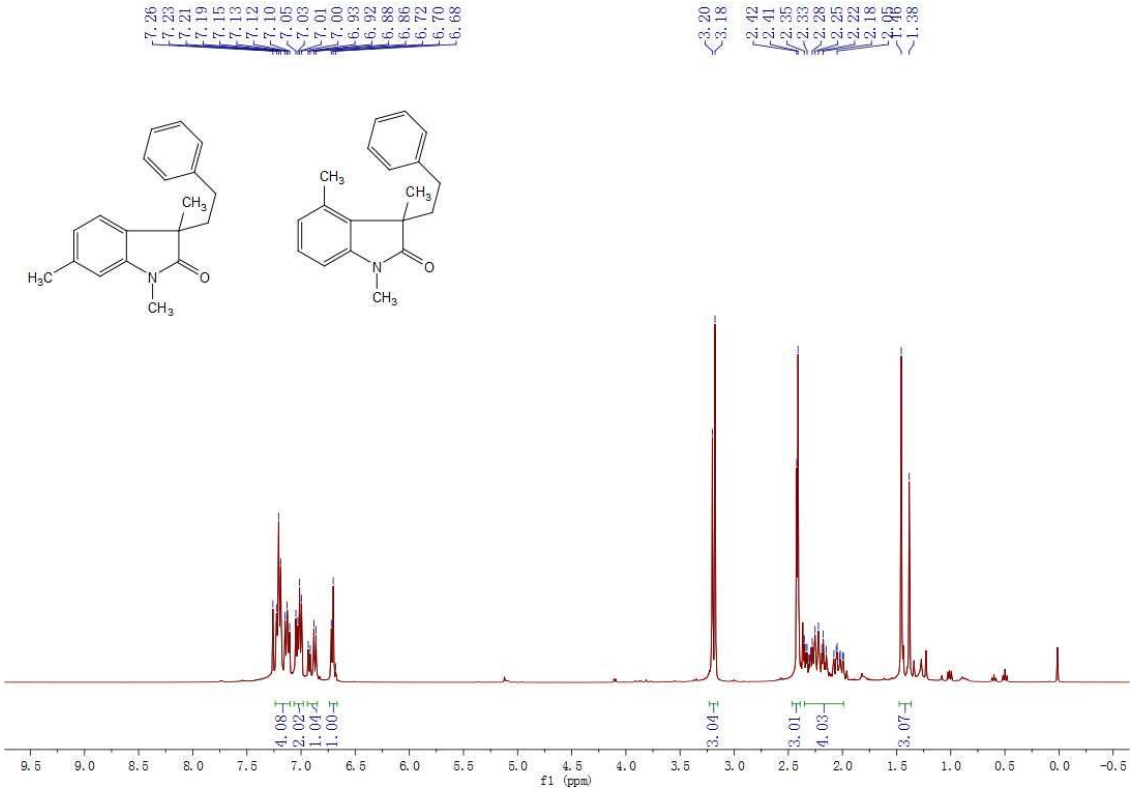


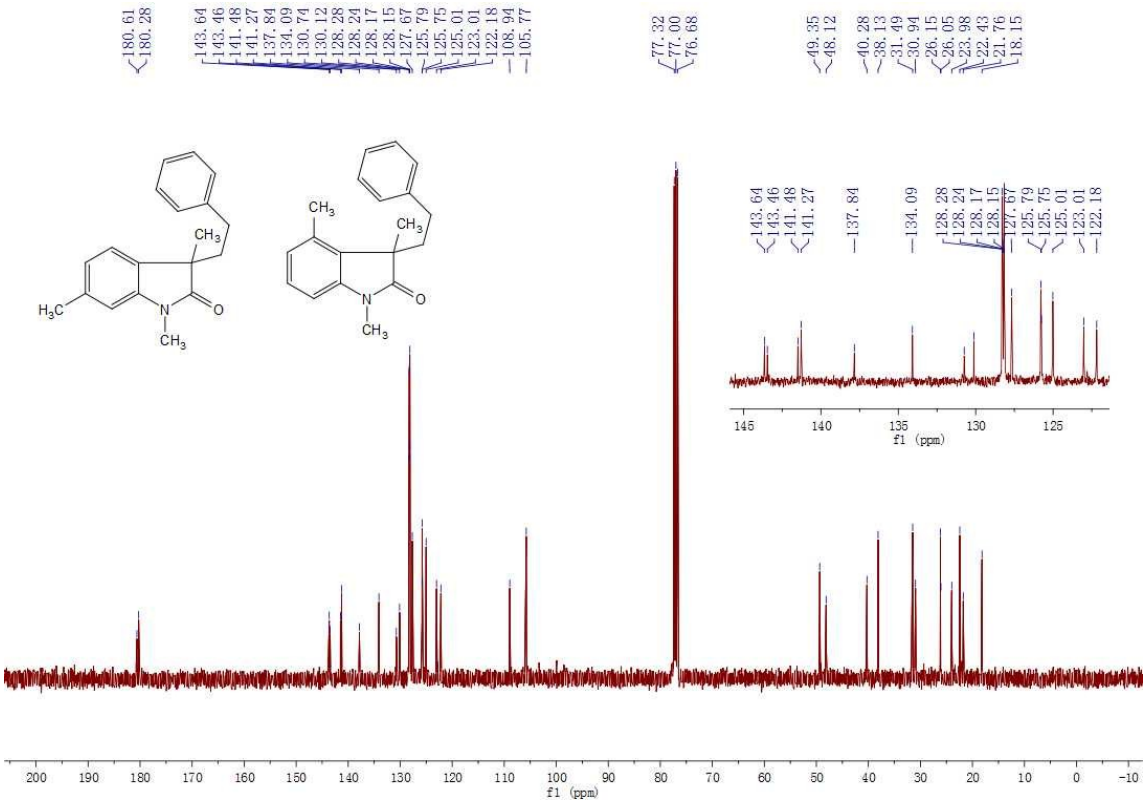
Methyl 1,3-dimethyl-2-oxo-3-phenethylindoline-5-carboxylate (5i):



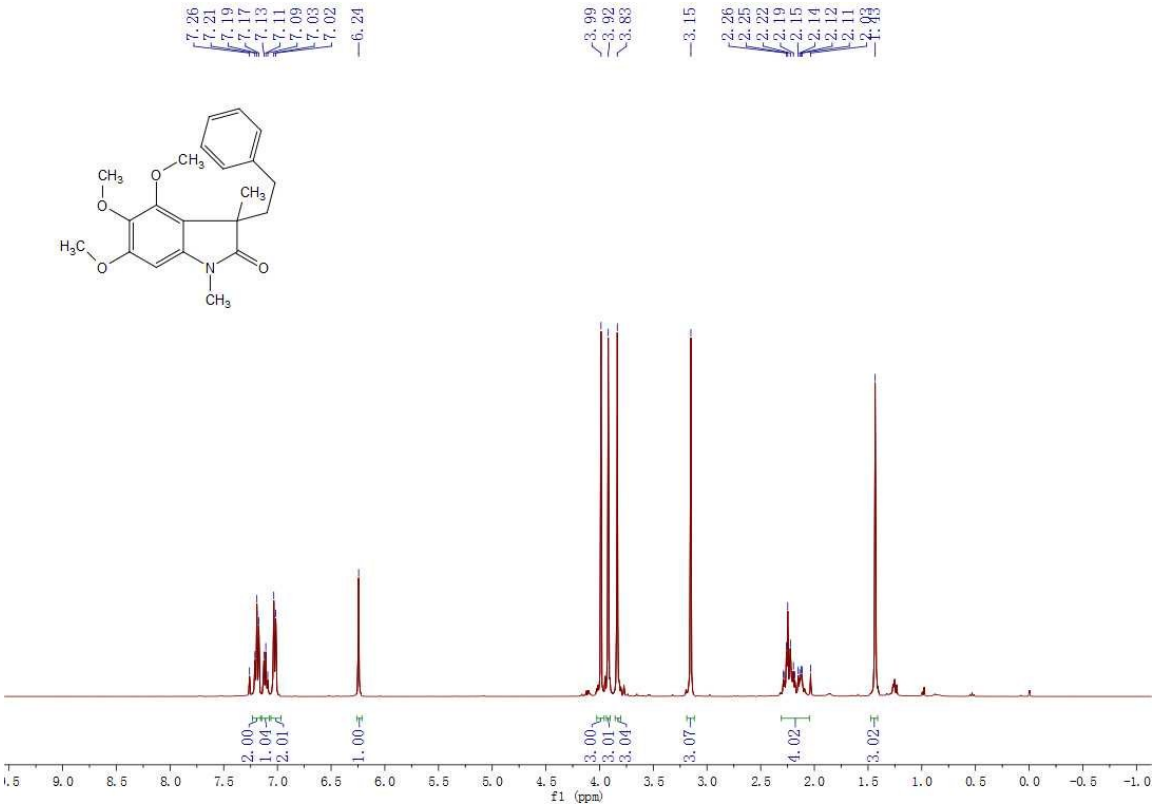


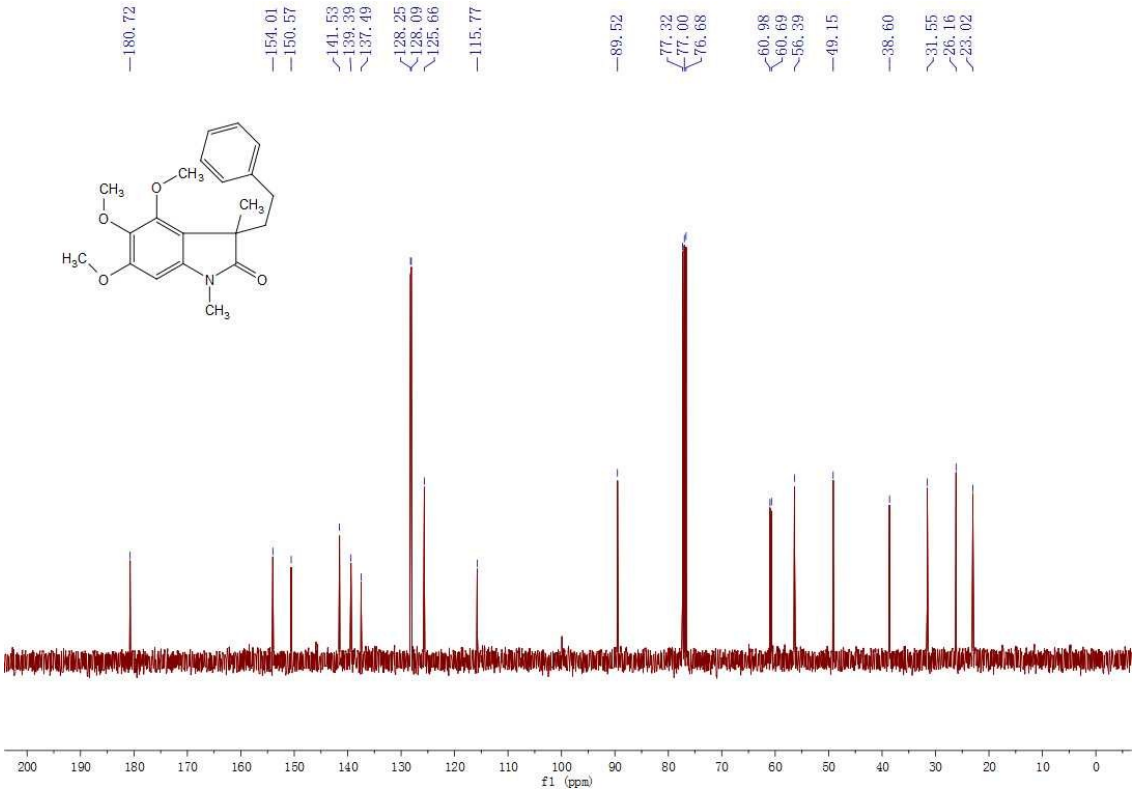
1,3,6-Trimethyl-3-phenethylindolin-2-one (5j) and 1,3,4-trimethyl-3-phenethylindolin-2-one (5j'):



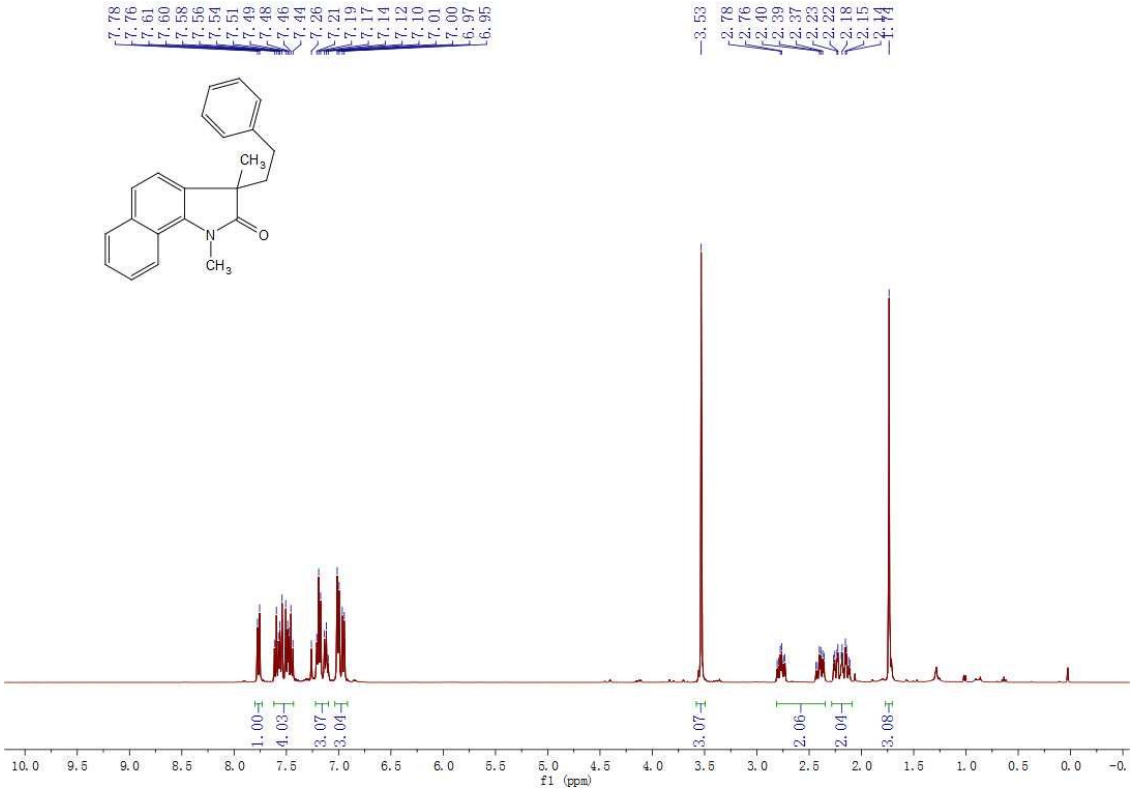


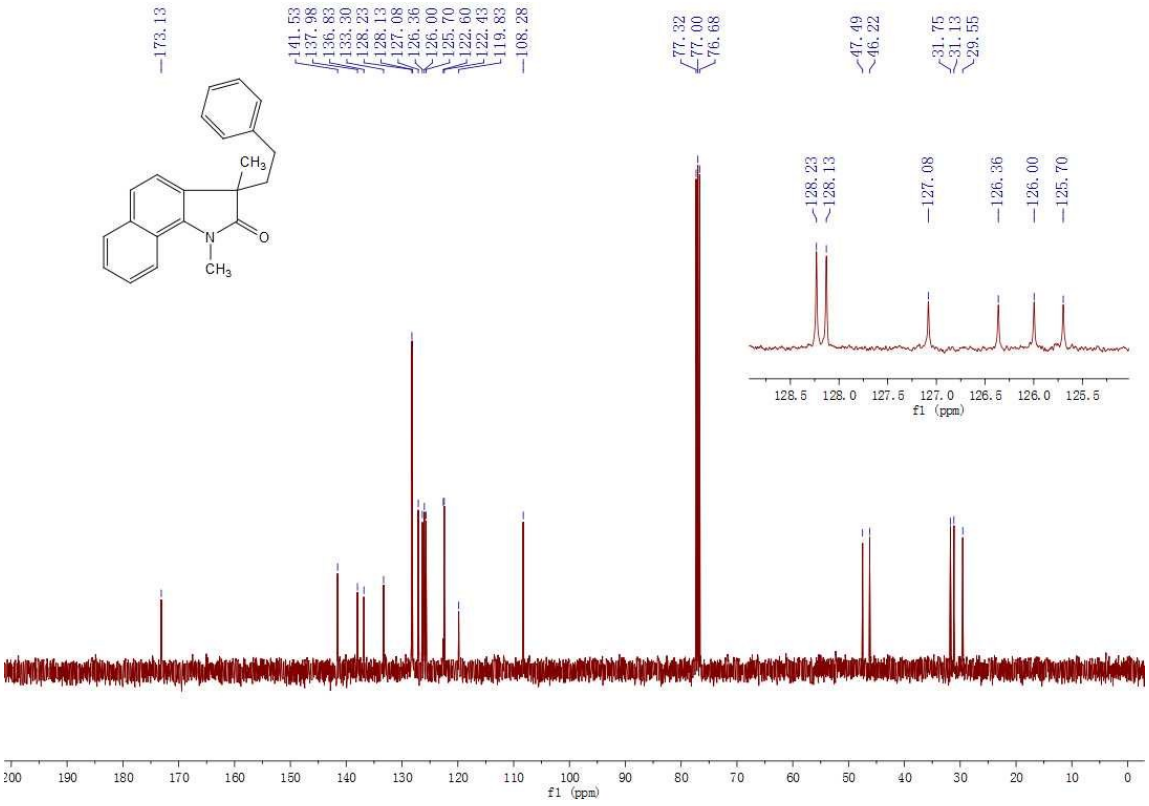
4,5,6-Trimethoxy-1,3-dimethyl-3-phenethylindolin-2-one (5k):



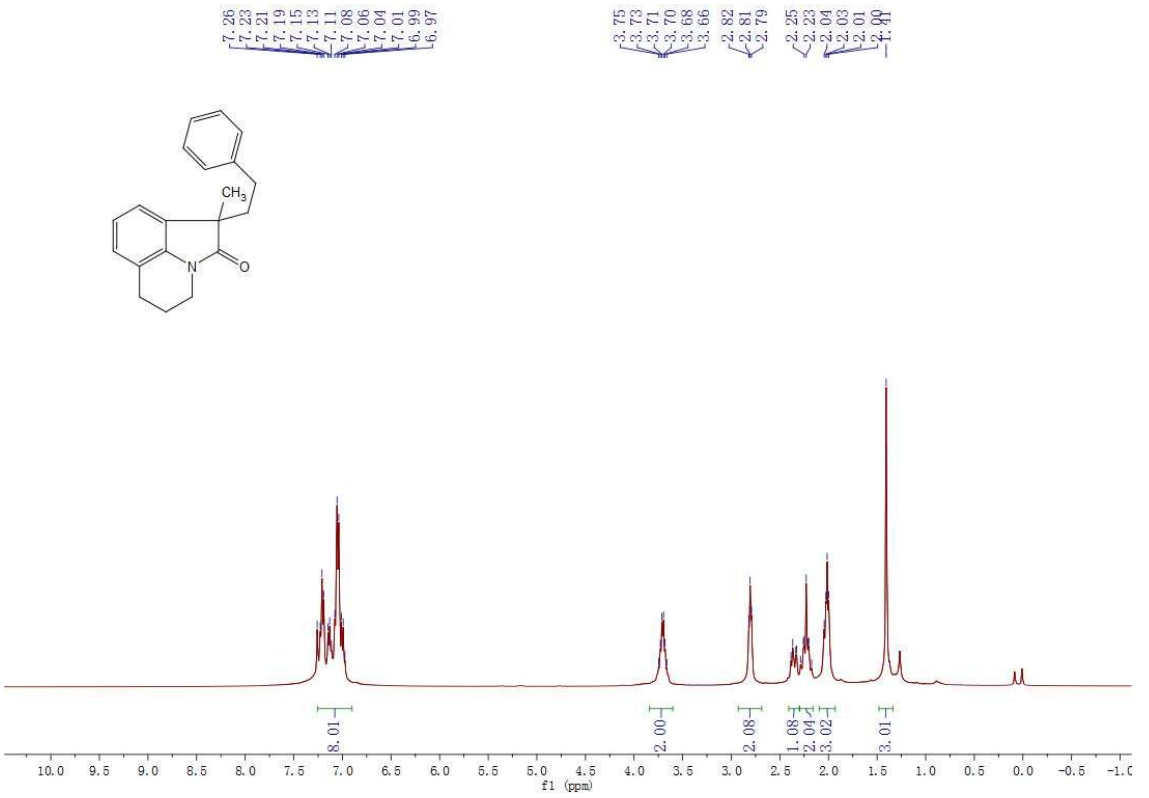


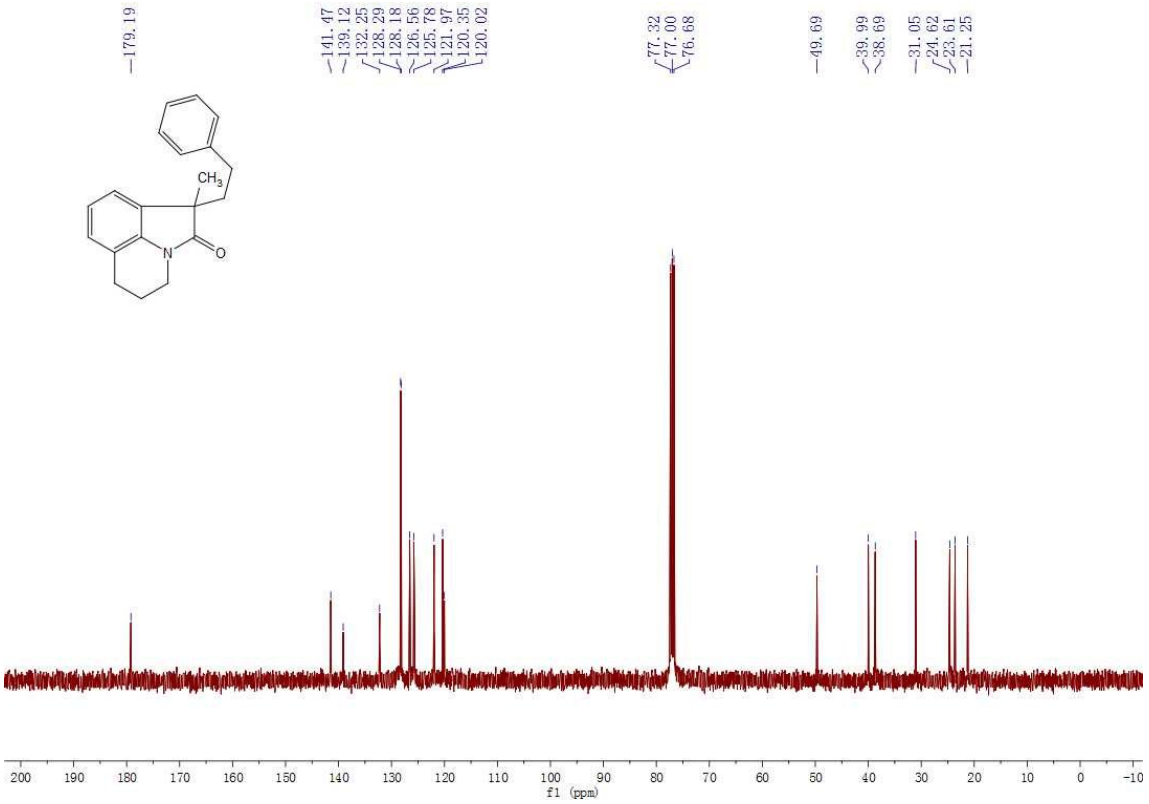
1,3-Dimethyl-3-phenethyl-1*H*-benzo[*g*]indol-2(3*H*)-one (5l):



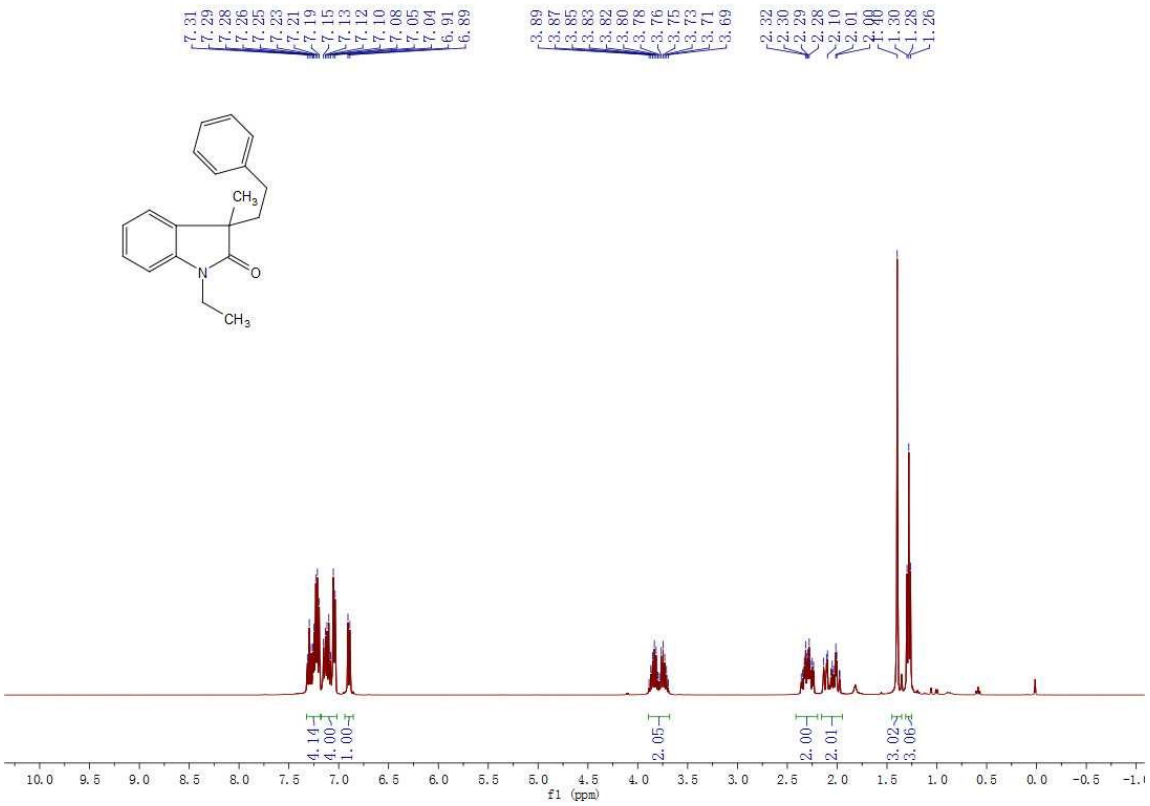


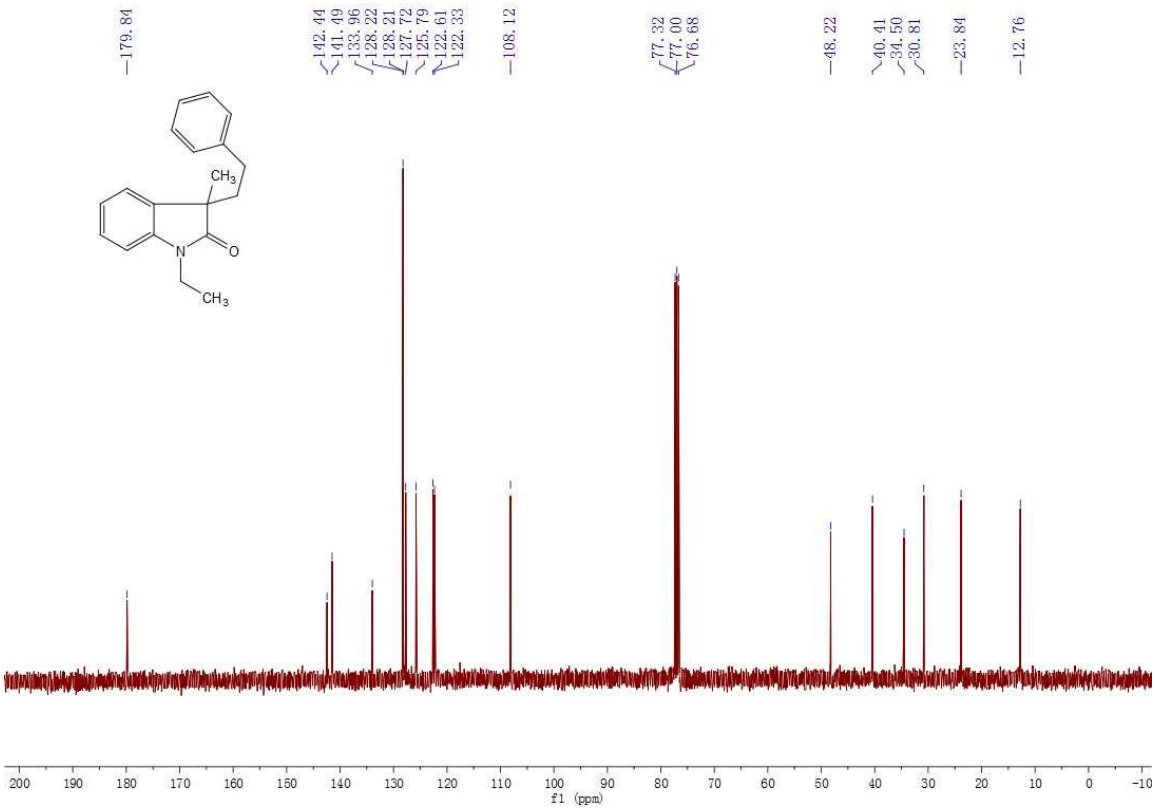
1-Methyl-1-phenethyl-5,6-dihydro-1*H*-pyrrolo[3,2,1-*ij*]quinolin-2(4*H*)-one (5m):



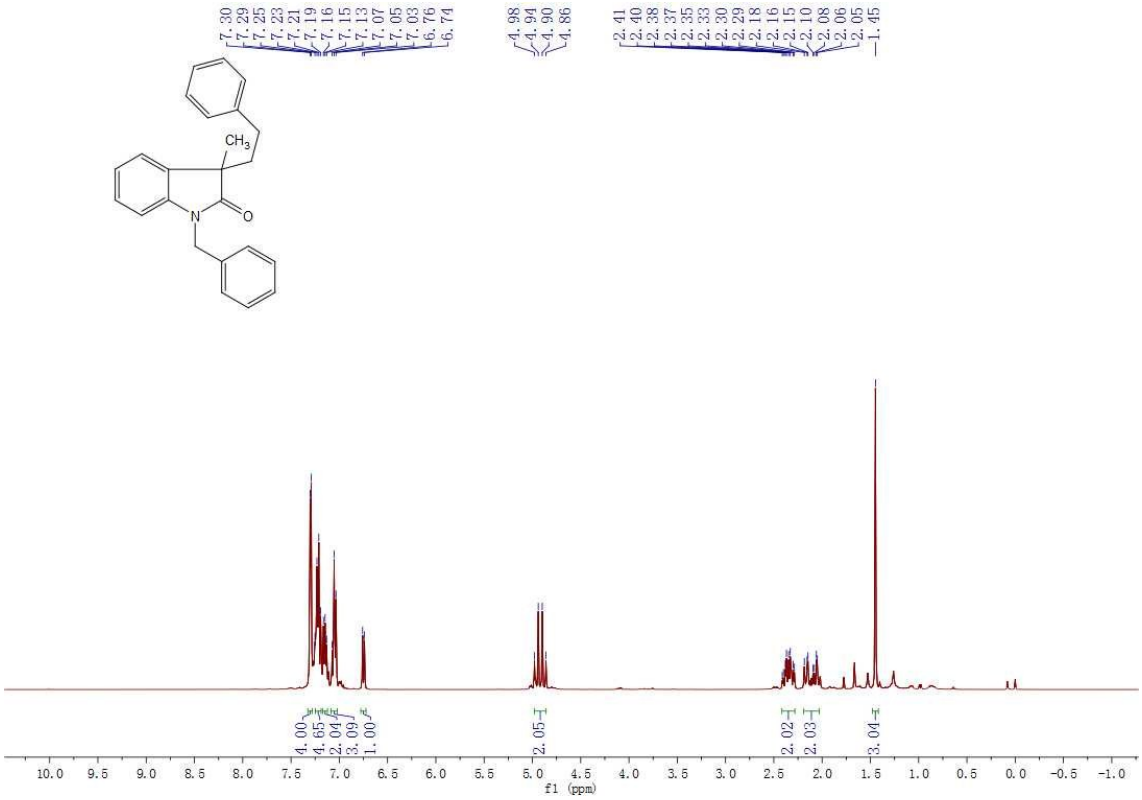


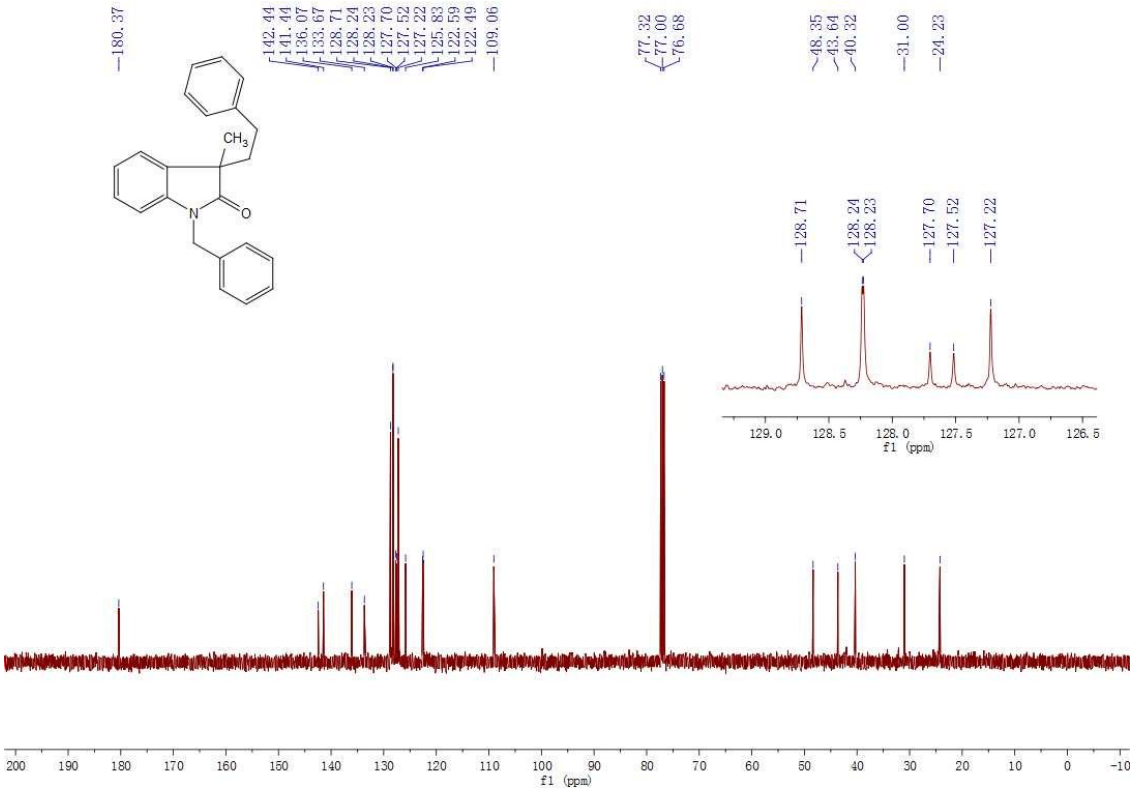
1-Ethyl-3-methyl-3-phenethylindolin-2-one (5n):



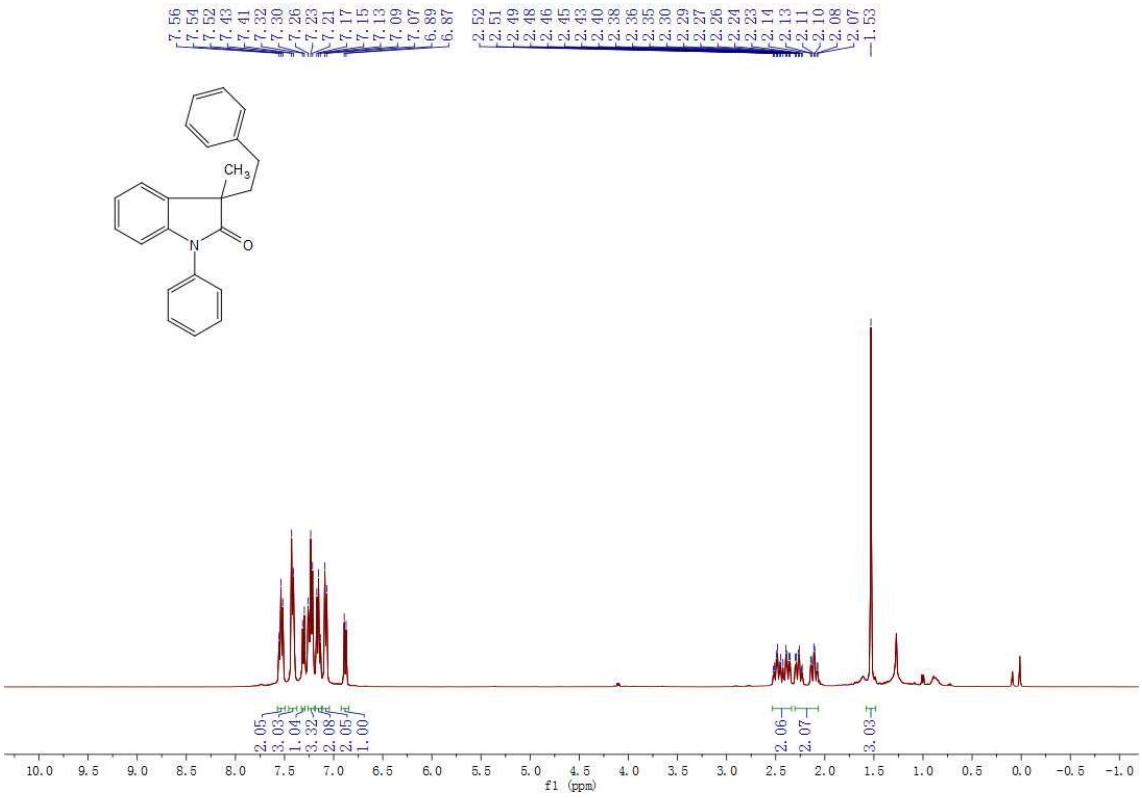


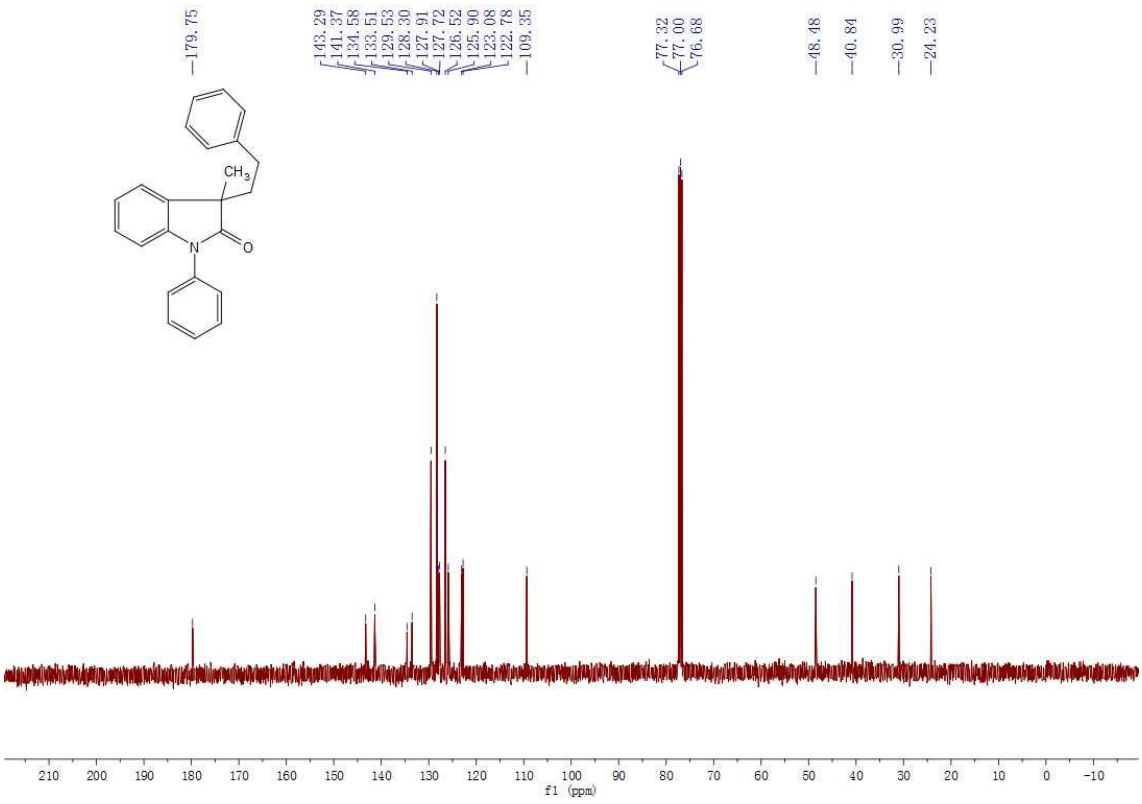
1-Benzyl-3-methyl-3-phenethylindolin-2-one (5o):



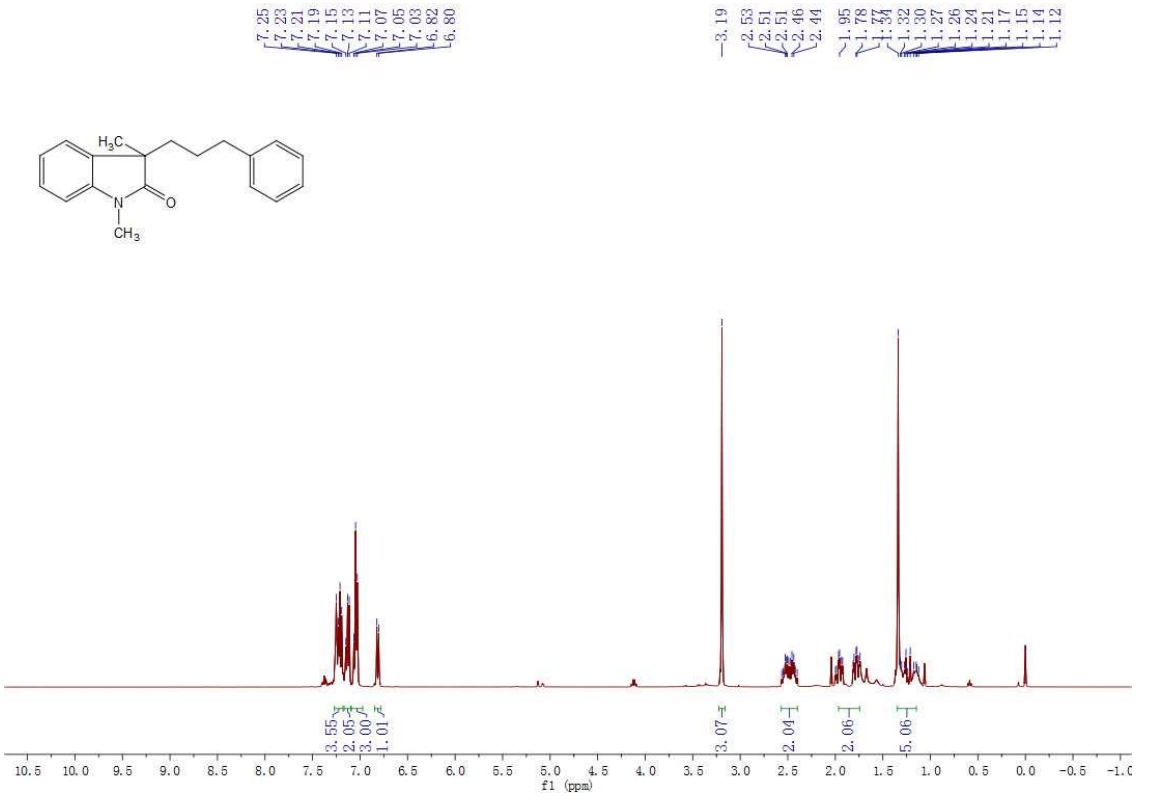


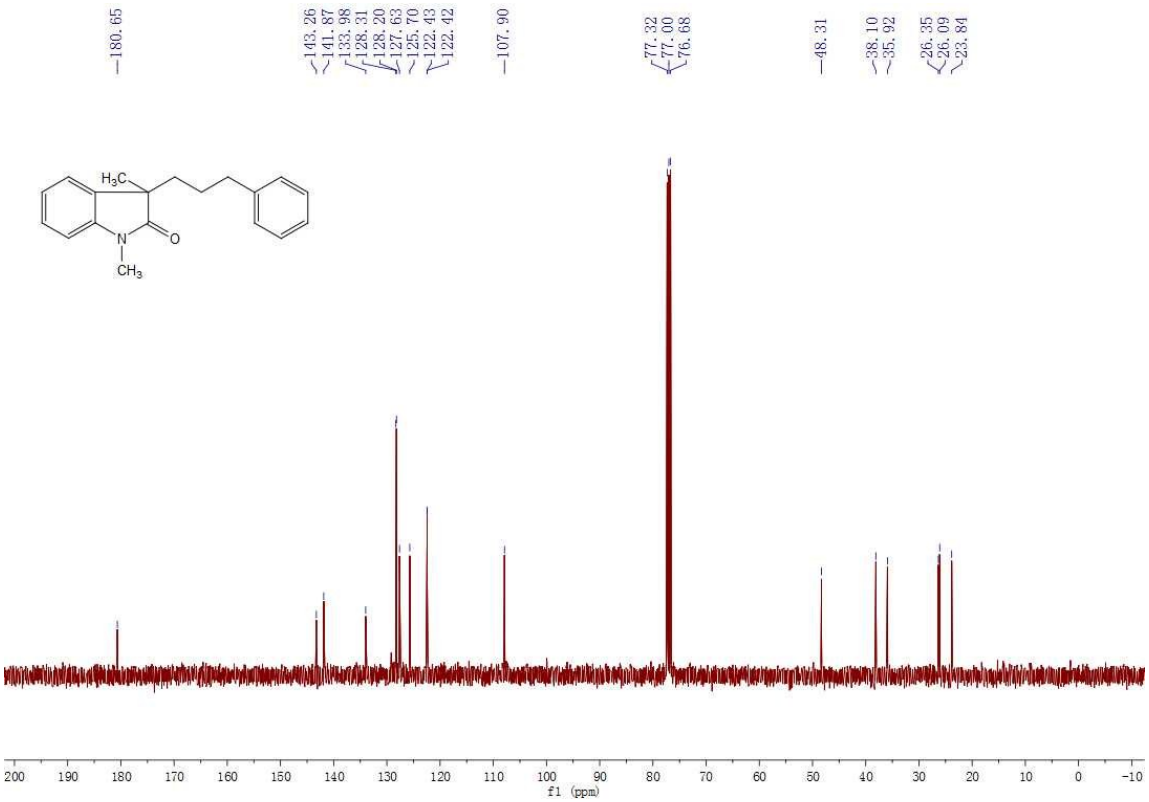
3-Methyl-3-phenethyl-1-phenylindolin-2-one (5p):



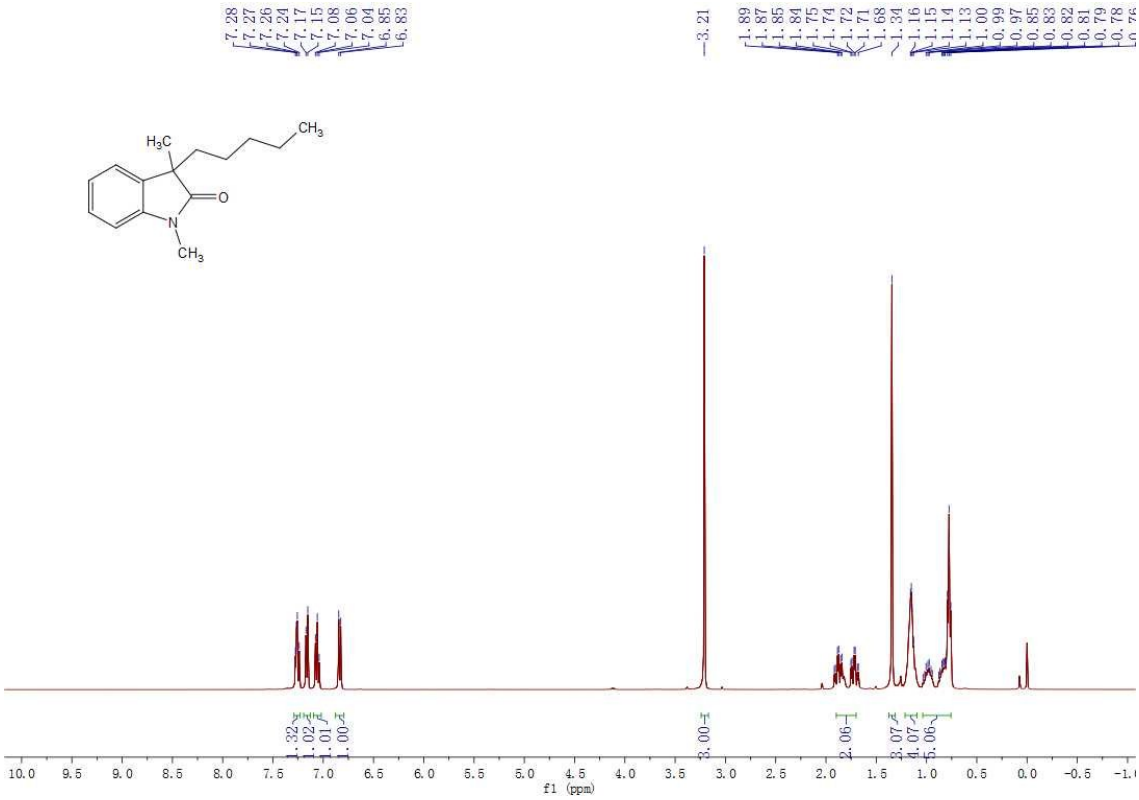


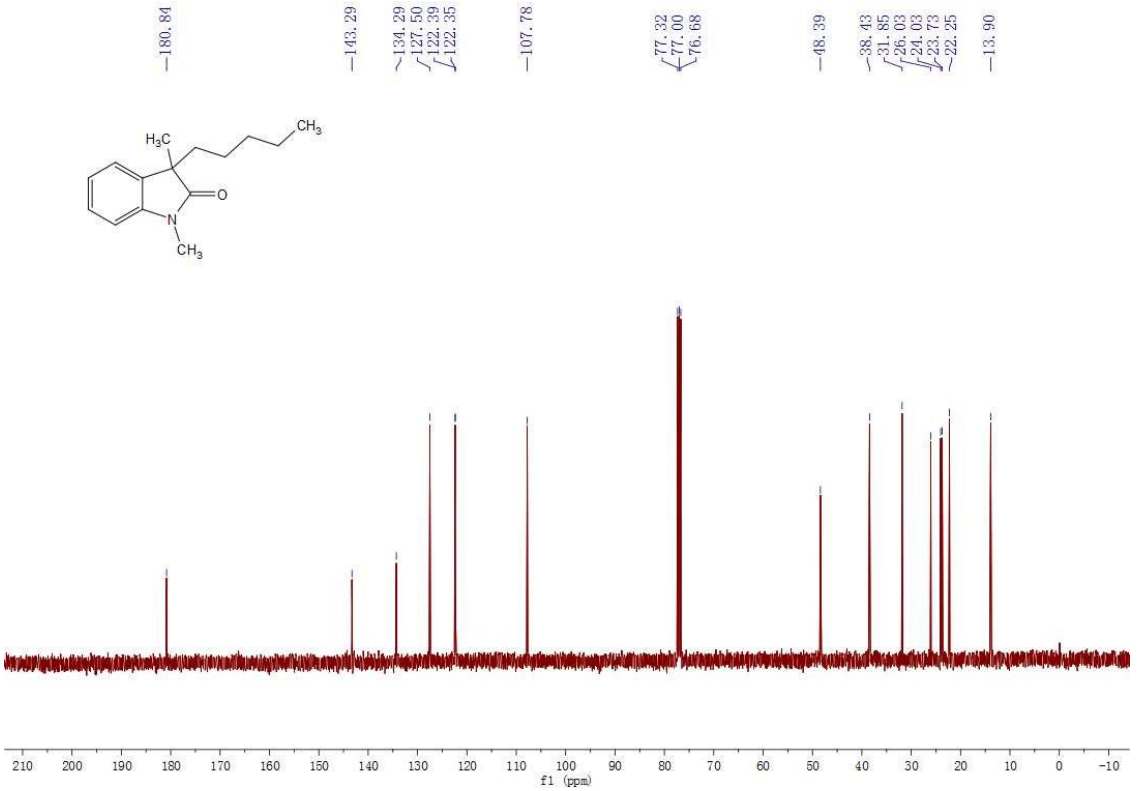
1,3-Dimethyl-3-(3-phenylpropyl)indolin-2-one (5q):



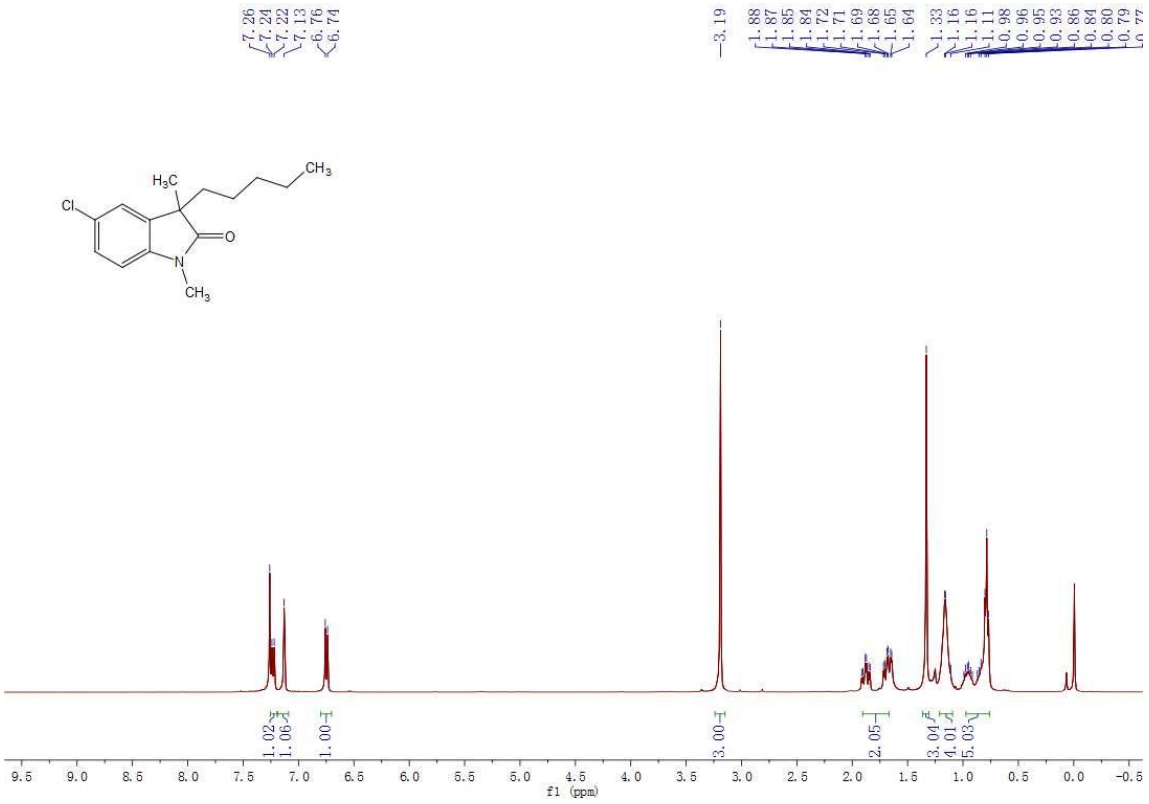


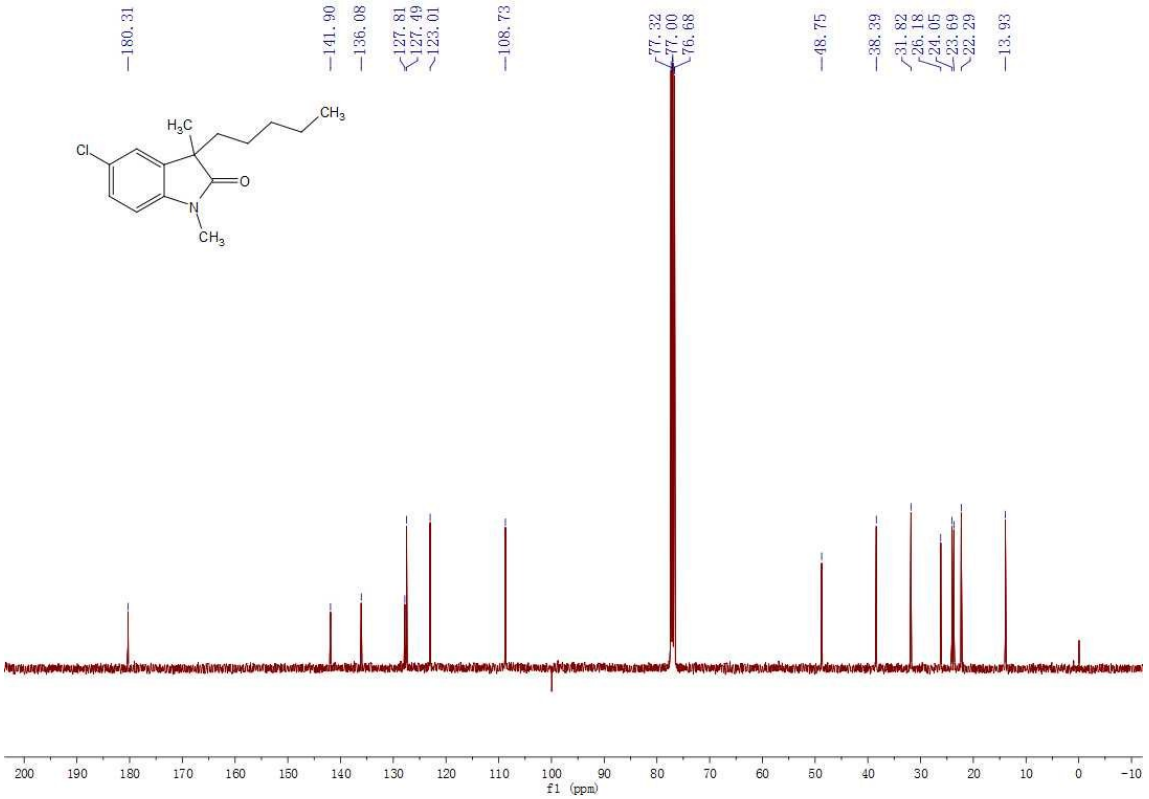
1,3-Dimethyl-3-pentylindolin-2-one (5r):



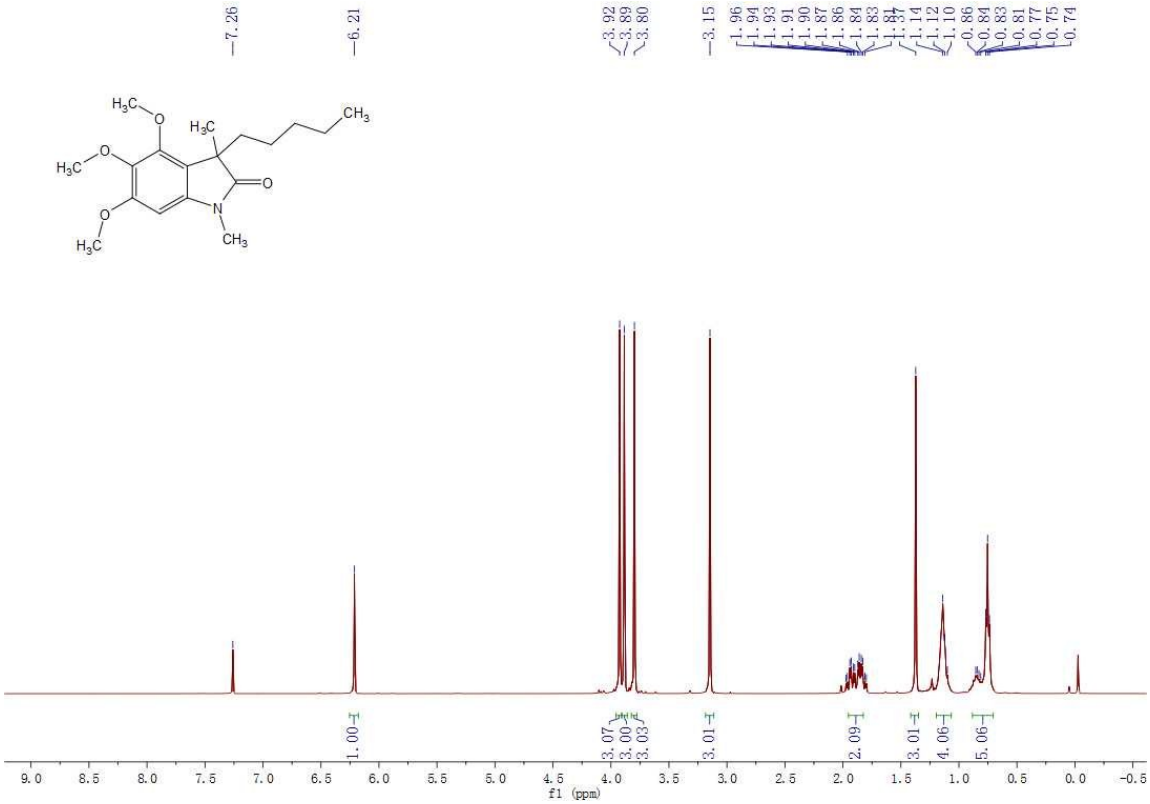


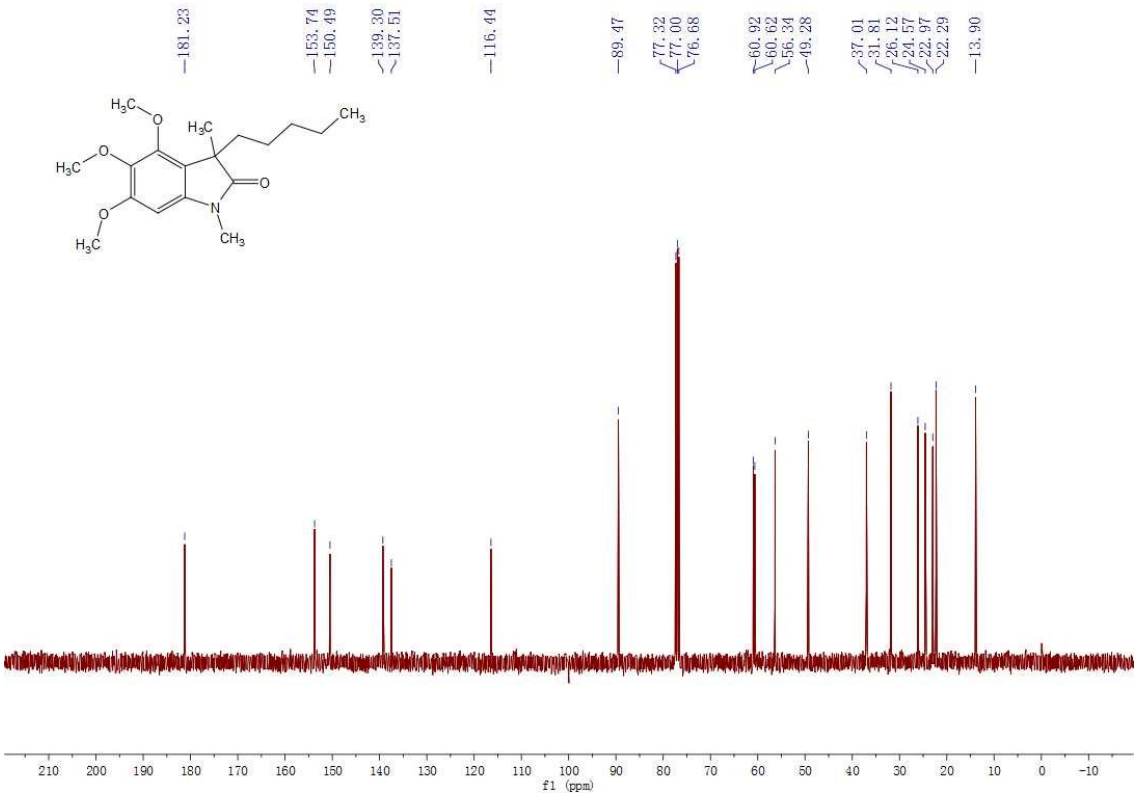
5-Chloro-1,3-dimethyl-3-pentylindolin-2-one (5s):





4,5,6-Trimethoxy-1,3-dimethyl-3-pentylindolin-2-one (5t):





1-Benzyl-3-methyl-3-pentylindolin-2-one (5u):