

Supporting Information

Alkylation of Isatins with Trichloroacetimidates

*Nilamber A. Mate, Rowan I. L. Meador, Bhaskar D. Joshi, and John D. Chisholm**

Department of Chemistry, Syracuse University, 1-014 Center for Science and Technology, Syracuse, NY

13244

jdchisho@syr.edu

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General Experimental Information

All anhydrous reactions were run under a positive pressure of argon. DCM (DCM) was dried by passage through an alumina column.¹ 1,2-Dichloroethane (DCE) was freshly distilled from calcium hydride before use. Tetrahydrofuran (THF) was freshly distilled from Na/benzophenone still before use. Silica gel column chromatography was performed using 60 Å silica gel (230–400 mesh). Melting points are uncorrected.

Trichloroacetimidates

Most of the trichloroacetimidates shown in Figure S1 (7,² 30,³ 32,³ 34,⁴ 36,⁵ 38,⁶ 40,⁴ and 42⁴) were synthesized from the corresponding alcohols as reported previously. Trichloroacetimidates 46, 48 and 50 were purchased from commercial sources.

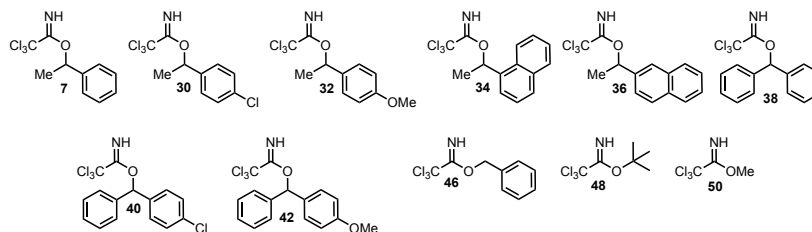
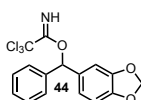


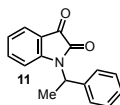
Figure S1



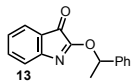
1-[(2H-1,3-Benzodioxol-5-yl)phenylmethoxy]-2,2,2-trichloro-1-ethanimine 44. A flame dried flask was charged with 2H-1,3benzodioxol-5-yl-2-phenylmethanol⁷ (18.76 mmol, 2 g) in dry DCM (29 mL) and placed under argon. The flask was cooled to 0 °C and 1,8-diazabicyclo[5.4.0]undec-7-ene (0.88 mmol, 0.13 mL) was added to the solution, followed by trichloroacetonitrile (11.4 mmol, 1.1 mL). After ~22 h the reaction mixture was concentrated and the residue purified by silica gel column chromatography (10%EA/5% Et₃N/85% hexanes) to provide imidate **44** a yellow solid. Yield: 67%; mp = 67-70 °C; TLC R_f = 0.55 (10% EA/90% hexanes); IR (ATR) 3336, 3030, 2889, 1662, 1487, 1237, 1065, 786 cm⁻¹; ¹H NMR (400 MHz, CDCl₃) δ 8.32 (s, 1H), 7.35 (m, 2H), 7.28-7.24 (m, 2H), 7.22-7.20 (m, 1H), 6.82-6.78 (m, 3H), 6.69-6.67 (m, 1H), 5.85 (d, J = 1.0 Hz, 2H); ¹³C NMR (100 MHz, CDCl₃) δ 161.3, 147.8, 147.5, 139.8, 128.7, 128.5, 127.9, 127.3, 127.2, 126.7, 121.1, 108.1, 107.7, 101.2, 81.2; Anal Calcd for C₁₆H₁₂Cl₃NO₃: C, 51.57; H, 3.25; N, 3.76; Found: C, 51.56; H, 3.21; N, 3.57.

General Experimental Procedure for the Isatin Alkylation

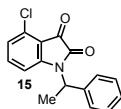
Isatin (0.7 mmol) was taken in a culture tube and solvent (either THF or ethyl acetate, 0.2 M) was added. The imidate (2.1 mmol) was added followed by freshly distilled BF₃•OEt₂ (0.07 mmol). The reaction mixture was stirred for 20 h at rt under a positive pressure of argon. The solvent was then evaporated, and the residue was loaded onto a silica gel column for purification using the listed solvent.



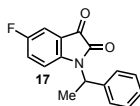
1-(1-Phenylethyl)-2,3-indolinedione 11. Purified by silica chromatography (35% EA/hexanes) to give product as yellow solid. Yield: 91%; TLC R_f = 0.32 (35% EA/65% hexanes); ¹H NMR (400 MHz, CDCl₃) δ 7.60 (d, J = 7.2 Hz, 1H), 7.41-7.29 (m, 6H), 7.03 (t, J = 7.5 Hz, 1H), 6.54 (d, J = 7.6 Hz, 1H), 5.79 (q, J = 7.2 Hz, 1H), 1.87 (d, J = 7.2 Hz, 3H); ¹³C NMR (100 MHz, CDCl₃) δ 183.5, 158.2, 149.8, 138.1, 137.9, 129.0, 128.0, 126.6, 125.4, 123.5, 118, 112.5, 50.0, 16.3. Chiral HPLC (Chiracel-OD), n-hexane:i-PrOH = 50:50, 1 mL/min, t_R = 5.6 and 6.1 min. This compound has been reported previously.⁸



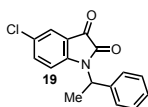
2-(1-Phenylethoxy)-3-indolone 13. Purified by silica chromatography (20% EA/hexanes) to give product as orange oil. Yield: 46%; TLC $R_f = 0.76$ (30% EA/70% hexanes); IR (ATR) 3555, 3062, 2979, 1741, 1591, 1450, 1263, 754 cm^{-1} ; $^1\text{H NMR}$ (400 MHz, CDCl_3) δ 7.45-7.41 (m, 4H), 7.39-7.31 (m, 3H), 7.10-7.04 (m, 2H), 6.15 (q, $J = 6.5$ Hz, 1H), 1.75 (d, $J = 6.6$ Hz, 3H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3) δ 186.6, 164.8, 160, 140.4, 137.7, 128.6, 128.3, 126.4, 125.7, 125, 122.5, 120.2, 78.5, 22.1. Chiral HPLC (Chiracel-OD), n-hexane:i-PrOH = 60:40, 1 mL/min, $t_R = 4.3$ and 4.5 min. HRMS (ESI+) calcd for $\text{C}_{16}\text{H}_{13}\text{NO}_2\text{H}^+$ $[\text{M} + \text{H}]^+$: 252.1025, found: 252.1027.



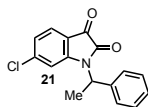
4-Chloro-1-(1-phenylethyl)-2,3-indolinedione 15. Purified by silica chromatography (30% EA/hexanes) to give product as orange solid. Yield: 71%; mp = 132-135 $^\circ\text{C}$; TLC $R_f = 0.44$ (30% EA/70% hexanes); IR (ATR) 3452, 3084, 2986, 1725, 1596, 1443, 779 cm^{-1} ; $^1\text{H NMR}$ (400 MHz, CDCl_3) δ 7.38-7.37 (m, 4H), 7.33-7.30 (m, 1H), 7.24-7.22 (m, 1H), 6.97 (d, $J = 8.2$ Hz, 1H), 6.45 (d, $J = 8.0$ Hz, 2H), 5.80 (q, $J = 7.2$ Hz, 1H), 1.86 (d, $J = 7.2$ Hz, 3H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3) δ 180.3, 157.3, 150.9, 138, 137.8, 133.9, 129, 128.1, 126.6, 125, 115.1, 110.6, 50.3, 16.3; Anal. Calcd for $\text{C}_{16}\text{H}_{12}\text{ClNO}_2$: C, 67.26; H, 4.23; N, 4.90. Found: C, 67.27; H, 4.22; N, 4.83; .



5-Fluoro-1-(1-phenylethyl)-2,3-indolinedione 17. Purified by silica chromatography (30% EA/hexanes) to give product as red oil. Yield: 65%; TLC $R_f = 0.43$ (30% EA/70% hexanes); IR (ATR) 3462, 3060, 2983, 1726, 1603, 1480, cm^{-1} ; $^1\text{H NMR}$ (400 MHz, CDCl_3) δ 7.38-7.31 (m, 5H), 6.48 (dd, $J = 6.6, 2.8$ Hz, 1H), 7.05 (dt, $J = 8.7, 2.7$ Hz, 1H), 6.49 (dd, $J = 8.7, 3.6$ Hz, 1H), 5.79 (q, $J = 7.4$ Hz, 1H), 1.85 (d, $J = 7.2$ Hz, 3H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3) δ 183.0 (d, $J = 2.2$ Hz), 159.0 (d, $J = 244.7$ Hz), 158.0 (d, $J = 1.9$ Hz), 145.8 (d, $J = 2.5$ Hz), 137.8, 129.0, 128.1, 126.6, 124.2 (d, $J = 23.7$ Hz), 118.8 (d, $J = 6.9$ Hz), 113.7 (d, $J = 6.9$ Hz), 112.3 (d, $J = 24.0$ Hz), 50.1, 16.2; Anal. Calcd for $\text{C}_{16}\text{H}_{12}\text{FNO}_2$: C, 71.37; H, 4.49; N, 5.20. Found: C, 71.46; H, 4.43; N, 5.20.

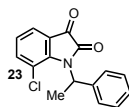


5-Chloro-1-(1-phenylethyl)-2,3-indolinedione 19. Purified by silica chromatography (30% EA/hexanes) to give product as bright orange waxy solid. Yield: 82%; mp = 89-94 $^\circ\text{C}$; TLC $R_f = 0.43$ (30% EA/70% hexanes); IR (ATR) 3308, 3060, 2984, 1729, 1612, 1445, 738 cm^{-1} ; $^1\text{H NMR}$ (400 MHz, CDCl_3) δ 7.55 (d, $J = 2.4$ Hz, 1H), 7.39-7.28 (m, 6H), 6.48 (d, $J = 8.5$ Hz, 1H), 5.79 (q, $J = 7.2$ Hz, 1H), 1.85 (d, $J = 7.2$ Hz, 3H); $^{13}\text{C NMR}$ (100 MHz, CDCl_3) δ 182.5, 157.6, 148, 137.7, 137.2, 129.4, 129.1, 128.2, 126.6, 125.3, 118.9, 113.7, 50.2, 16.2; Anal. Calcd for $\text{C}_{16}\text{H}_{12}\text{ClNO}_2$: C, 67.26; H, 4.23; N, 4.90. Found: C, 67.10; H, 4.20; N, 4.93.

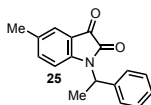


6-Chloro-1-(1-phenylethyl)-2,3-indolinedione 21. Purified by silica chromatography (25% EA/hexanes) to give product as an orange solid. Yield: 36%; mp = 118-122 $^\circ\text{C}$; TLC $R_f = 0.72$ (30% EA/70% hexanes); IR (ATR) 3457, 3075, 2976, 1737, 1602, 1446, 700 cm^{-1} ; $^1\text{H NMR}$ (400 MHz, CDCl_3) δ 7.51 (d, $J = 8.0$ Hz, 1H), 7.39-7.38 (m, 4H), 7.34-7.31 (m, 1H), 7.00 (dd, $J = 8.0, 1.6$ Hz, 1H), 6.56 (d, $J = 1.6$ Hz, 1H), 5.73 (q, $J = 7.2$

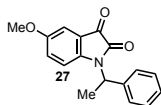
Hz, 1H), 1.86 (d, $J = 7.2$ Hz, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 182, 158.1, 150.8, 144.2, 137.7, 129.1, 128.2, 126.6, 126.3, 123.7, 116.3, 113, 50.4, 16.3; Anal. Calcd for $\text{C}_{16}\text{H}_{12}\text{ClNO}_2$: C, 67.26; H, 4.23; N, 4.90. Found: C, 67.23; H, 4.23; N, 4.96.



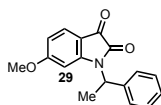
7-Chloro-1-(1-phenylethyl)-2,3-indolinedione 23. Purified by silica chromatography (25% EA/hexanes) to give product as dark orange oil. Yield: 21%; TLC $R_f = 0.62$ (30% EA/70% hexanes); IR (ATR) 3476, 3346, 3063, 2980, 1745, 1581, 758 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.51 (d, $J = 7.3$ Hz, 2H), 7.42-7.31 (m, 5H), 7.00 (t, $J = 7.6$ Hz, 1H), 6.28 (q, $J = 6.5$ Hz, 1H), 1.77 (d, $J = 6.6$ Hz, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 185.8, 164.9, 156.4, 140, 138, 128.6, 128.5, 126.7, 126.6, 125.4, 124.4, 123.1, 79.1, 21.8; Anal. Calcd for $\text{C}_{16}\text{H}_{12}\text{ClNO}_2$: C, 67.26; H, 4.23; N, 4.90. Found: C, 67.25; H, 4.26; N, 4.84.



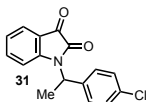
5-Methyl-1-(1-phenylethyl)-2,3-indolinedione 25. Purified by silica chromatography (40% EA/hexanes) to give product as red oil. Yield: 74%; TLC $R_f = 0.56$ (40% EA/60% hexanes); IR (ATR) 3437, 3052, 2983, 1728, 1621, 1488 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.41-7.30 (m, 6H), 7.14 (d, $J = 8.1$ Hz, 1H), 6.43 (d, $J = 8.1$ Hz, 1H), 5.77 (q, $J = 7.2$ Hz, 1H), 2.26 (s, 3H), 1.85 (d, $J = 7.2$ Hz, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 183.8, 158.3, 147.6, 138.3, 138.2, 133.3, 128.9, 127.8, 126.6, 125.7, 118.1, 112.3, 49.9, 20.5, 16.3; Anal. Calcd for $\text{C}_{17}\text{H}_{15}\text{NO}_2$: C, 76.96; H, 5.70; N, 5.28. Found: C, 76.99; H, 5.70; N, 5.21.



5-Methoxy-1-(1-phenylethyl)-2,3-indolinedione 27. Purified by silica chromatography 10% EA/hexanes to give product as dark red solid. Yield: 71%; mp = 76-80 $^\circ\text{C}$; TLC $R_f = 0.32$ (30% EA/70% hexanes); IR (ATR) 3365, 3025, 2963, 1722, 1625, 1484, 1272 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.35-7.29 (m, 4H), 7.24-7.23 (m, 1H), 7.06 (d, $J = 2.1$ Hz, 1H), 6.84 (dd, $J = 8.7, 2.6$ Hz, 1H), 6.41 (d, $J = 8.7$ Hz, 1H), 5.70 (q, $J = 7.1$ Hz, 1H), 3.68 (s, 1H), 1.79 (d, $J = 7.2$ Hz, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 183.9, 158.3, 156.2, 143.6, 138.2, 128.9, 127.9, 126.6, 124.2, 118.5, 113.5, 109.6, 55.9, 49.9, 16.3; Anal. Calcd for $\text{C}_{17}\text{H}_{15}\text{NO}_3$: C, 72.58; H, 5.37; N, 4.98. Found: C, 72.58; H, 5.33; N, 4.95.

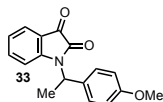


6-Methoxy-1-(1-phenylethyl)-2,3-indolinedione 29. Purified by silica chromatography 10% EA/hexanes to give product as yellow solid. Yield: 67%; mp = 126-130 $^\circ\text{C}$; TLC $R_f = 0.47$ (30% EA/70% hexanes); IR (ATR) 3450, 3030, 2976, 1720, 1607, 1447, 1222 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.57 (d, $J = 8.4$ Hz, 1H), 7.40-7.35 (m, 4H), 7.32-7.30 (m, 1H), 6.47 (dd, $J = 8.4, 2$ Hz, 1H), 6.01 (d, $J = 1.9$ Hz, 1H), 5.76 (q, $J = 7.2$ Hz, 1H), 3.71 (s, 1H), 1.85 (d, $J = 7.2$ Hz, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 180.8, 167.6, 159.6, 152.2, 138.3, 128.9, 128, 127.9, 126.7, 111.7, 107.7, 99.6, 55.8, 49.9, 16.4; Anal. Calcd for $\text{C}_{17}\text{H}_{15}\text{NO}_3$: C, 72.58; H, 5.37; N, 4.98. Found: C, 72.64; H, 5.34; N, 4.96.

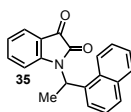


1-[1-(*p*-Chlorophenyl)ethyl]-2,3-indolinedione 31. Purified by silica chromatography 10% EA/hexanes to give product as orange solid. Yield: 65%; mp = 102-105 $^\circ\text{C}$; TLC $R_f = 0.47$ (30% EA/70% hexanes); IR (ATR)

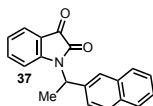
3457, 3035, 2980, 1740, 1723, 1606, 1463, 753 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.51 (d, $J = 7.4$ Hz, 1H), 7.39-7.31 (m, 5H), 7.06 (t, $J = 7.6$ Hz, 1H), 6.53 (d, $J = 8.4$ Hz, 1H), 5.74 (q, $J = 7.2$ Hz, 1H), 1.85 (d, $J = 7.2$ Hz, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 183.2, 158.1, 149.5, 138, 136.7, 134, 129.1, 128, 125.6, 123.6, 118.1, 112, 49.5, 16.3; Anal. Calcd for $\text{C}_{16}\text{H}_{12}\text{ClNO}_2$: C, 67.26; H, 4.23; N, 4.90. Found: C, 67.53; H, 4.25; N, 4.86.



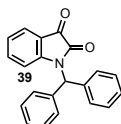
1-[1-(*p*-Methoxyphenyl)ethyl]-2,3-indolinedione 33. Purified by silica chromatography 10% EA/hexanes to give product as red oil. Yield: 85%; TLC $R_f = 0.33$ (30% EA/70% hexanes); IR (ATR) 3454, 2935, 2835, 1729, 1607, 1512, 1248 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.58 (d, $J = 7.3$ Hz, 1H), 7.36-7.29 (m, 3H), 7.02 (t, $J = 7.5$ Hz, 1H), 6.88 (d, $J = 8.7$ Hz, 1H), 6.57 (d, $J = 8.0$ Hz, 1H), 5.74 (q, $J = 7.1$ Hz, 1H), 3.79 (s, 1H), 1.83 (d, $J = 7.2$ Hz, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 180.7, 159.2, 158.1, 149.9, 137.9, 130, 127.9, 125.3, 123.4, 118, 114.3, 112.5, 55.3, 49.6, 16.4; Anal. Calcd for $\text{C}_{17}\text{H}_{15}\text{NO}_3$: C, 72.58; H, 5.37; N, 4.98. Found: C, 72.62; H, 5.35; N, 5.02.



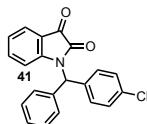
1-[1-(1-Naphthyl)ethyl]-2,3-indolinedione 35. Purified by silica chromatography 10% EA/hexanes to give product as yellow solid. Yield: 79%; mp = 56-61 $^{\circ}\text{C}$; TLC $R_f = 0.44$ (30% EA/70% hexanes); IR (ATR) 3457, 3060, 2930, 1724, 1606, 1466 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.96 (d, $J = 9.2$ Hz, 1H), 7.87 (t, $J = 8.8$ Hz, 2H), 7.82 (d, $J = 7.2$ Hz, 1H), 7.57-7.46 (m, 4H), 7.22 (d, $J = 7.7$ Hz, 1H), 6.92 (t, $J = 7.5$ Hz, 1H), 6.69 (d, $J = 8.1$ Hz, 1H), 6.40 (q, $J = 7.2$ Hz, 1H), 2.01 (d, $J = 7.1$ Hz, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 183.3, 157.9, 150.2, 137.9, 133.9, 133.4, 131.4, 129.6, 129.1, 127.3, 126.2, 125.4, 125.2, 124.8, 123.3, 122.9, 118.1, 112.2, 47.9, 16.7; Anal. Calcd for $\text{C}_{20}\text{H}_{15}\text{NO}_2$: C, 79.72; H, 5.02; N, 4.65. Found: C, 79.67; H, 5.02; N, 4.59.



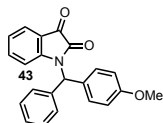
1-[1-(2-Naphthyl)ethyl]-2,3-indolinedione 37. Purified by silica chromatography 10% EA/hexanes to give product as yellow orange solid. Yield: 72%; mp = 142-145 $^{\circ}\text{C}$; TLC $R_f = 0.44$ (30% EA/70% hexanes); IR (ATR) 3467, 3053, 2984, 1744, 1726, 1607, 1465 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.88-7.81 (m, 4H), 7.60 (d, $J = 7.3$ Hz, 1H), 7.54-7.48 (m, 2H), 7.44 (d, $J = 8.5$ Hz, 1H), 7.29-7.27 (m, 1H), 7.00 (t, $J = 7.5$ Hz, 1H), 6.57 (d, $J = 8.0$ Hz, 1H), 5.95 (q, $J = 6.7$ Hz, 1H), 1.96 (d, $J = 7.1$ Hz, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 183.5, 158.3, 149.8, 138, 135.7, 133.2, 132.8, 129, 128, 127.7, 126.6, 126.5, 125.4, 125.3, 124.7, 123.5, 118, 112.5, 50.2, 16.3; Anal. Calcd for $\text{C}_{20}\text{H}_{15}\text{NO}_2$: C, 79.72; H, 5.02; N, 4.65. Found: C, 79.67; H, 5.00; N, 4.71.



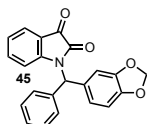
1-Benzhydryl-2,3-indolinedione 39. Purified by silica chromatography 10% EA/hexanes to give product as yellow solid. Yield: quant.; TLC $R_f = 0.50$ (30% EA/70% hexanes); ^1H NMR (400 MHz, CDCl_3) δ 7.62 (d, $J = 7.4$ Hz, 1H), 7.37-7.30 (m, 11H), 7.04 (t, $J = 7.4$ Hz, 1H), 6.98 (s, 1H), 6.50 (d, $J = 8.1$ Hz, 1H); ^{13}C NMR (100 MHz, CDCl_3) δ 183, 158.4, 150.6, 137.8, 136.6, 128.8, 128.4, 128.3, 125.4, 123.6, 118.2, 113.7, 58.9. This compound has been reported previously.⁹



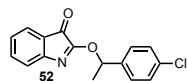
1-[(*p*-Chlorophenyl)phenylmethyl]-2,3-indolinedione 41. Purified by silica chromatography (30% EA/hexanes) to give product as yellow solid. Yield: 82%; mp = 162-165 °C; TLC R_f = 0.66 (40% EA/60% hexanes); IR (ATR) 3455, 3087, 3031, 2902, 1726, 1606, 1477, 750 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.63 (d, J = 7.4 Hz, 1H), 7.38-7.27 (m, 9H), 7.25 (m, 1H), 7.06 (t, J = 7.6 Hz, 1H), 6.93 (s, 1H), 6.49 (d, J = 8.1 Hz, 1H); ^{13}C NMR (100 MHz, CDCl_3) δ 182.8, 158.3, 150.2, 137.9, 136.1, 135.2, 134.3, 129.7, 129.1, 129, 128.5, 128.3, 125.5, 123.8, 118.2, 113.4, 58.4; Anal. Calcd for $\text{C}_{21}\text{H}_{14}\text{ClNO}_2$: C, 72.52; H, 4.06; N, 4.03. Found: C, 72.52; H, 4.06; N, 4.03;



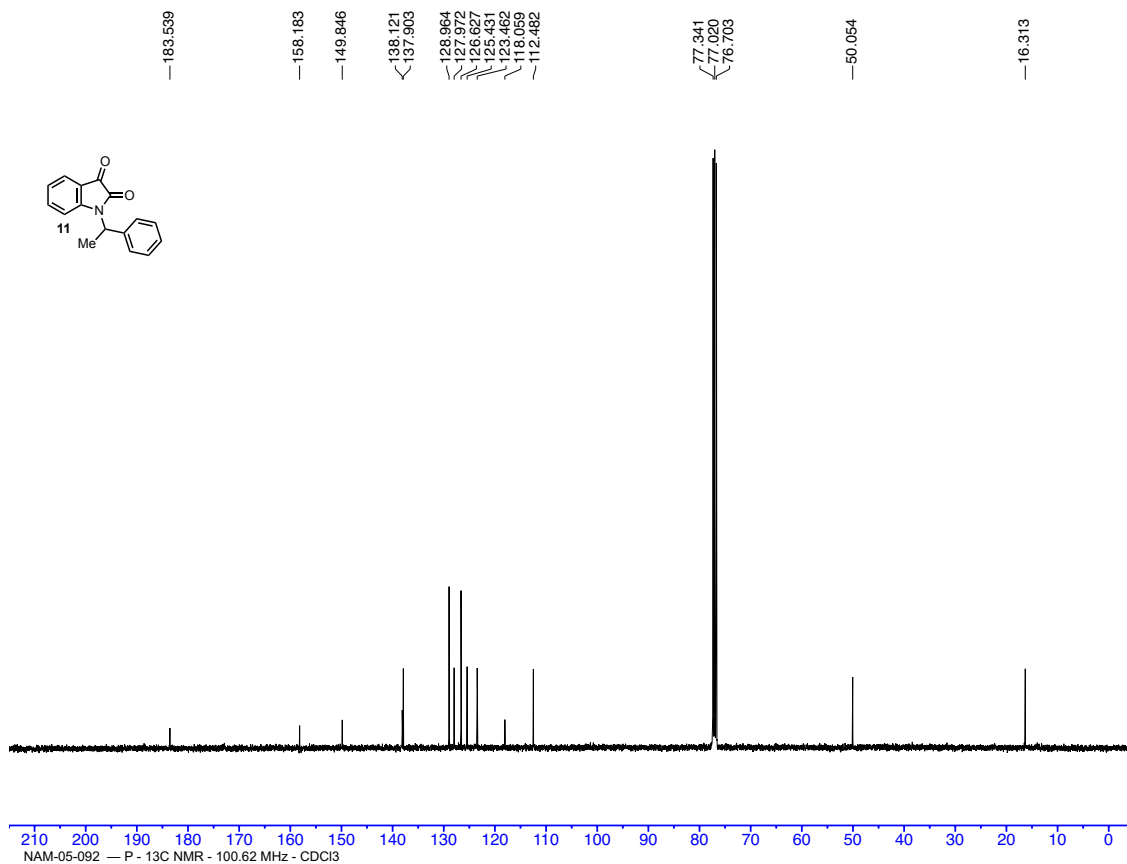
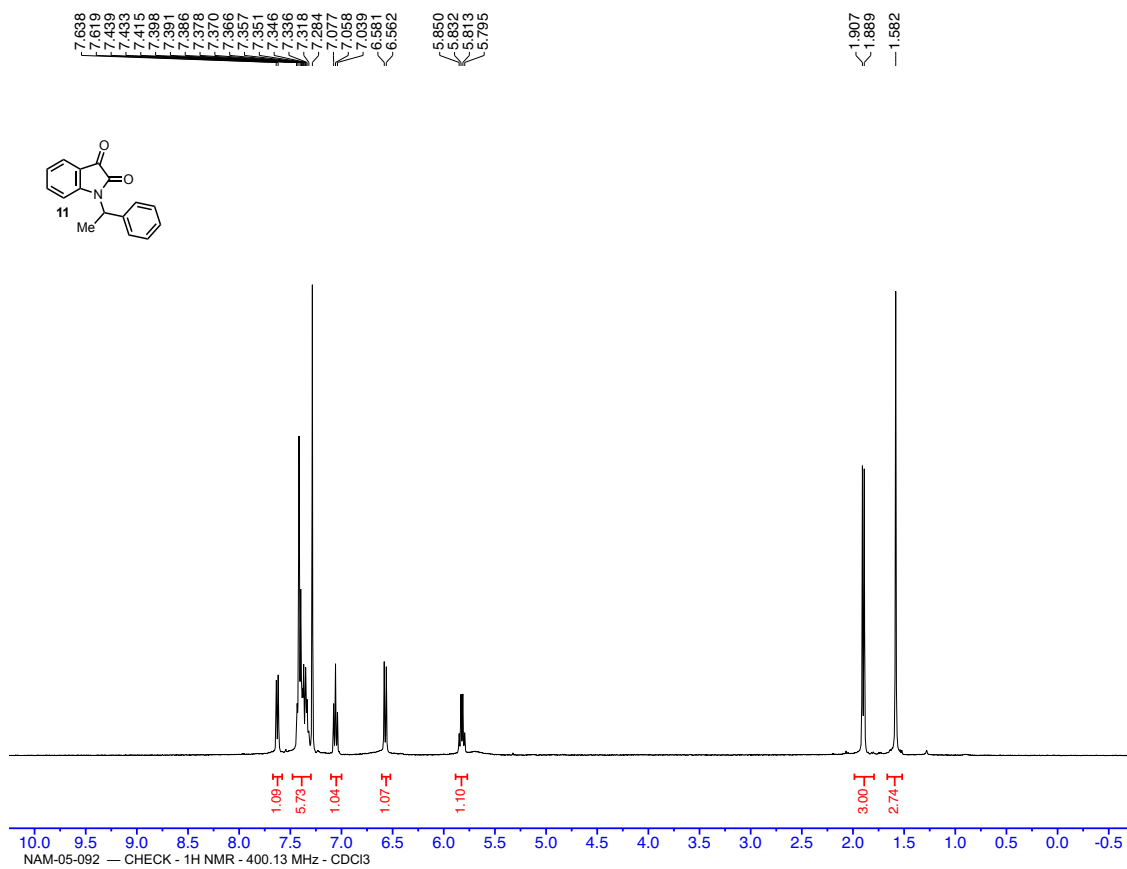
1-[(*p*-Methoxyphenyl)phenylmethyl]-2,3-indolinedione 43. Purified by silica chromatography 10% EA/hexanes to give product as dark yellow solid. Yield: 59%; mp = 51-55 °C; TLC R_f = 0.44 (30% EA/70% hexanes); IR (ATR) 3459, 3059, 2932, 1729, 1699, 1607, 1464, 1247 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.61 (d, J = 7.4 Hz, 1H), 7.36-7.29 (m, 6H), 7.23 (d, J = 8.5 Hz, 1H), 7.04 (t, J = 7.5 Hz, 1H), 6.93 (s, 1H), 6.88 (d, J = 7.6 Hz, 2H), 6.51 (d, J = 8.1 Hz, 1H), 3.80 (s, 3H); ^{13}C NMR (100 MHz, $\text{CO}(\text{CD}_3)_2$) δ 183.1, 159.5, 158.2, 150.8, 137.7, 137.5, 129.8, 129.2, 128.6, 128.2, 127.8, 124.4, 123.2, 118.5, 113.9, 113.2, 58.5, 54.7 (one signal in the ^{13}C NMR was not resolved); Anal. Calcd for $\text{C}_{22}\text{H}_{17}\text{NO}_3$: C, 76.95; H, 4.99; N, 4.08. Found: C, 76.86; H, 5.01; N, 4.12.



1-[(2*H*-1,3-Benzodioxol-5-yl)phenylmethyl]-2,3-indolinedione 45. Purified by silica chromatography (30% EA/hexanes) to give product as orange solid. Yield: 65%; mp = 72-78 °C; TLC R_f = 0.52 (30% EA/70% hexanes); IR (ATR) 3456, 3061, 2898, 1728, 1608, 1486, 1234, cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.61 (d, J = 6.9 Hz, 1H), 7.36-7.30 (m, 6H), 7.05 (t, J = 7.4 Hz, 1H), 6.86 (s, 1H), 6.78-6.77 (m, 3H), 6.53 (d, J = 8.1 Hz, 1H), 5.96 (s, 2H); ^{13}C NMR (100 MHz, CDCl_3) δ 183.1, 158.3, 150.6, 148.1, 147.6, 137.8, 136.7, 130.5, 128.8, 128.2, 128.1, 125.4, 123.6, 122.1, 118.2, 113.6, 108.9, 108.4, 101.5, 58.8; Anal. Calcd for $\text{C}_{22}\text{H}_{15}\text{NO}_4$: C, 73.94; H, 4.23; N, 3.92. Found: C, 73.91; H, 4.22; N, 3.97.

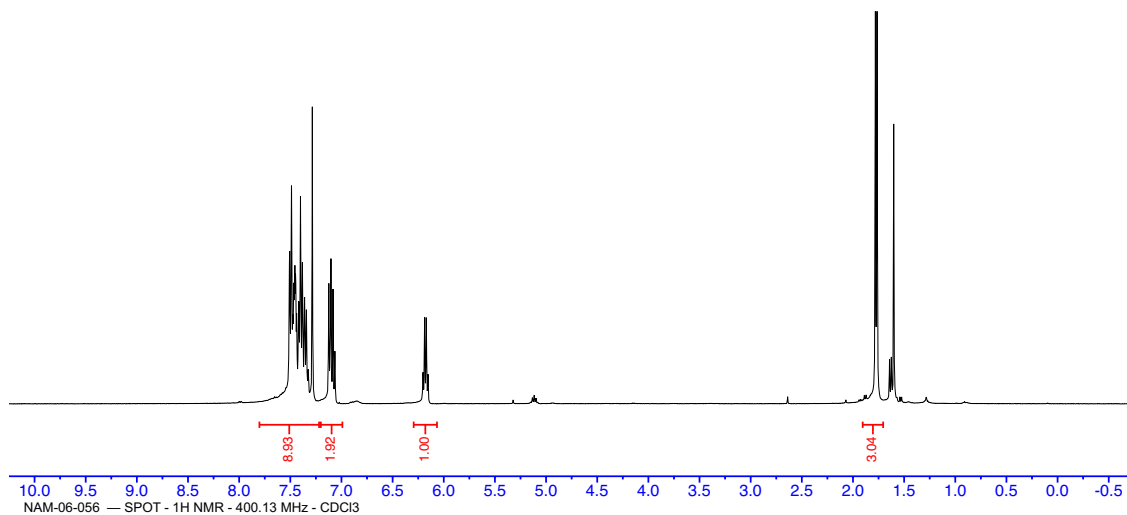
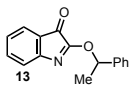


2-[1-(*p*-Chlorophenyl)ethoxy]-3-indolone 52. Purified by silica chromatography (20% EA/hexanes) to give product as orange oil. Yield: 59%; TLC R_f = 0.58 (25% EA/75% hexanes); IR (ATR) 3190, 3072, 2986, 1746, 1729, 1692, 1451, 1263, 1082 cm^{-1} ; ^1H NMR (400 MHz, CDCl_3) δ 7.45-7.40 (m, 4H), 7.34 (d, J = 8.4 Hz, 2H), 7.09-7.05 (m, 2H), 6.11 (q, J = 6.6 Hz, 1H), 1.72 (d, J = 6.6 Hz, 3H); ^{13}C NMR (100 MHz, CDCl_3) δ 186.4, 164.6, 159.8, 139, 137.7, 134.1, 128.8, 127.8, 125.8, 125, 122.5, 120.3, 77.6, 22.1; HRMS (ESI+) calcd for $\text{C}_{16}\text{H}_{12}\text{ClNO}_2\text{H}^+$ $[\text{M} + \text{H}]^+$: 286.0635, found: 286.0626.



7.510
7.506
7.493
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7.478
7.474
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7.464
7.458
7.455
7.449
7.446
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7.422
7.418
7.401
7.396
7.385
7.381
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7.360
7.343
7.285
7.163
7.083
6.187
6.170
6.154

1.781
1.764
1.602



186.579

164.800

160.046

140.451

137.680

128.989

128.584

128.336

126.371

123.666

122.514

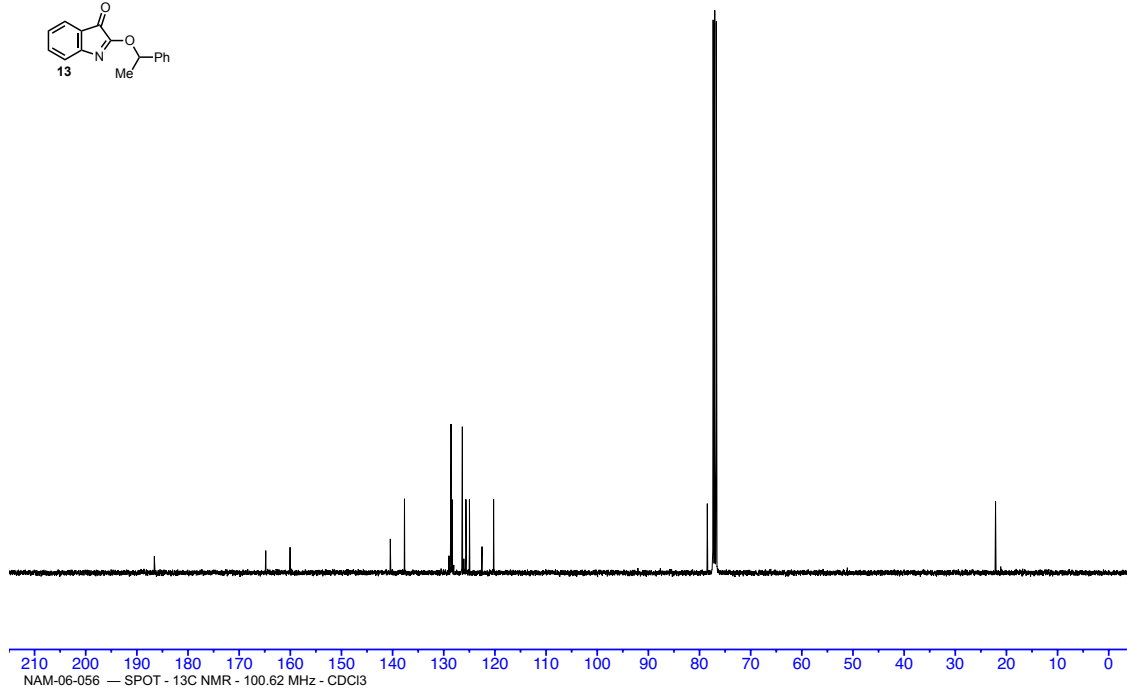
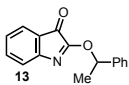
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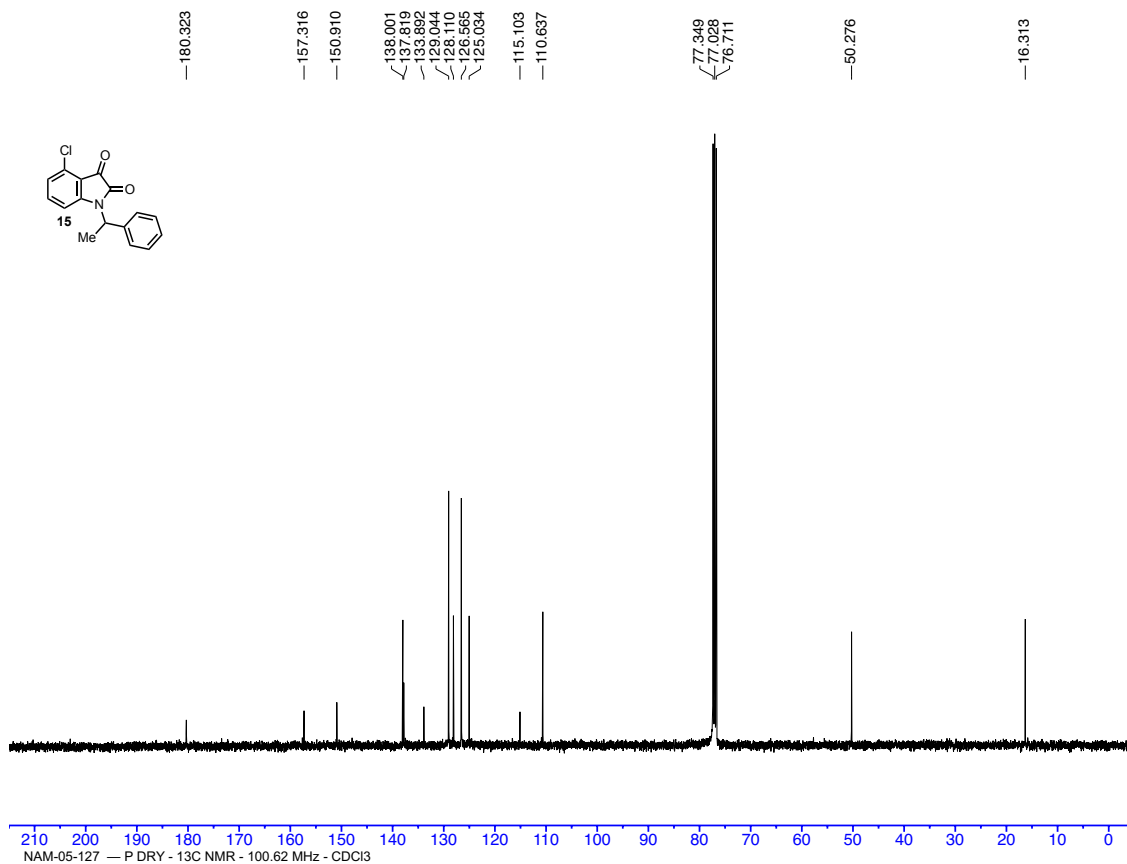
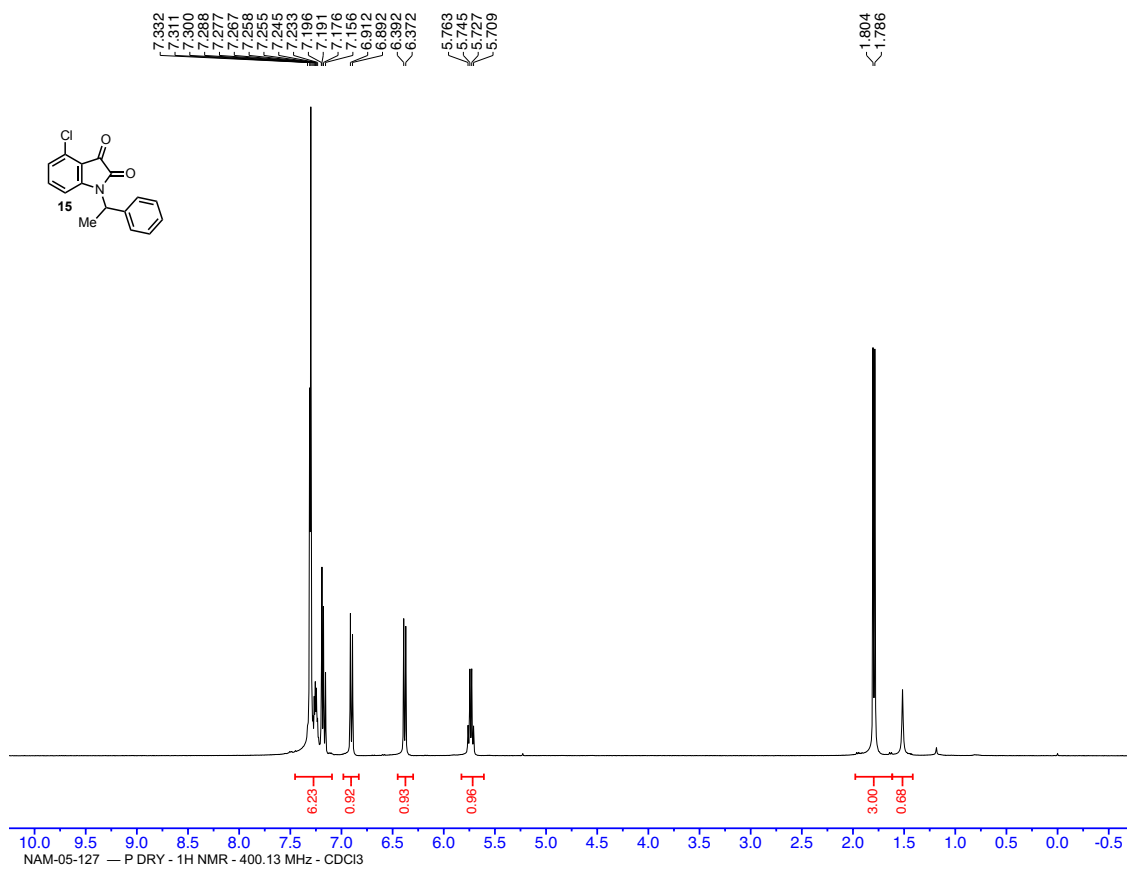
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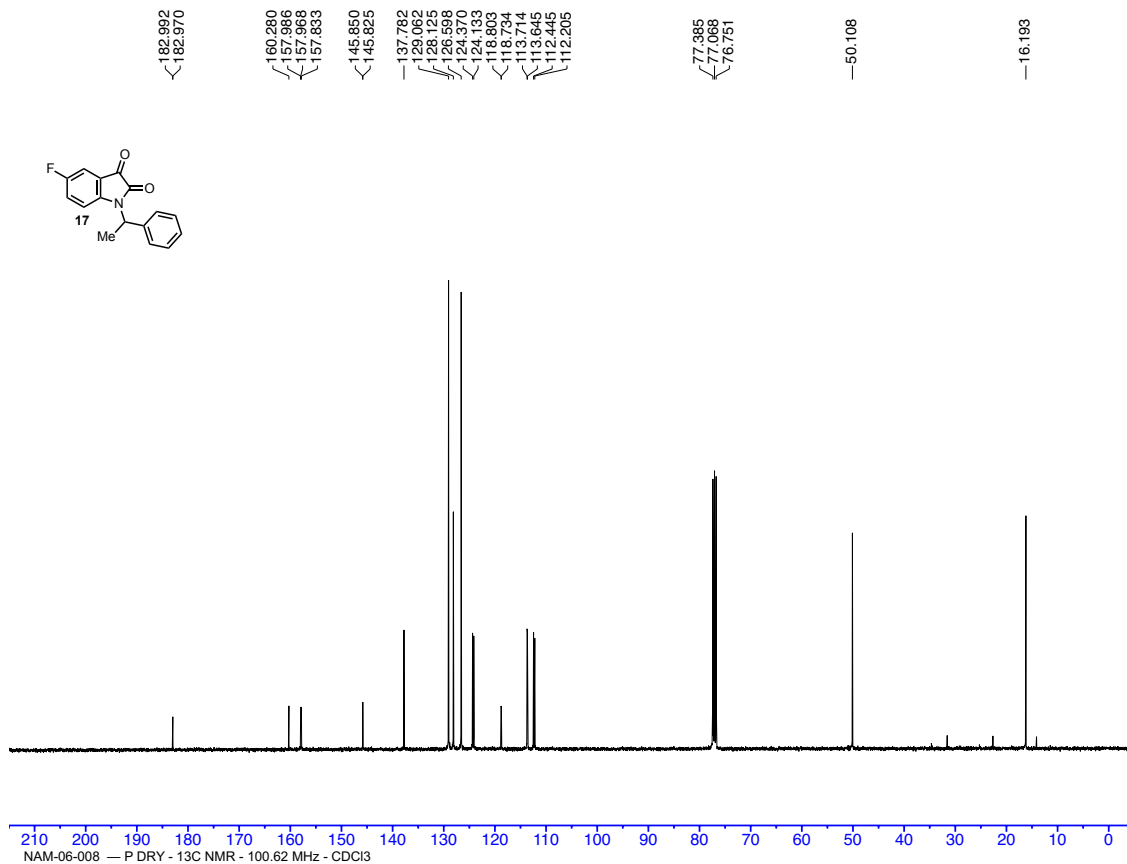
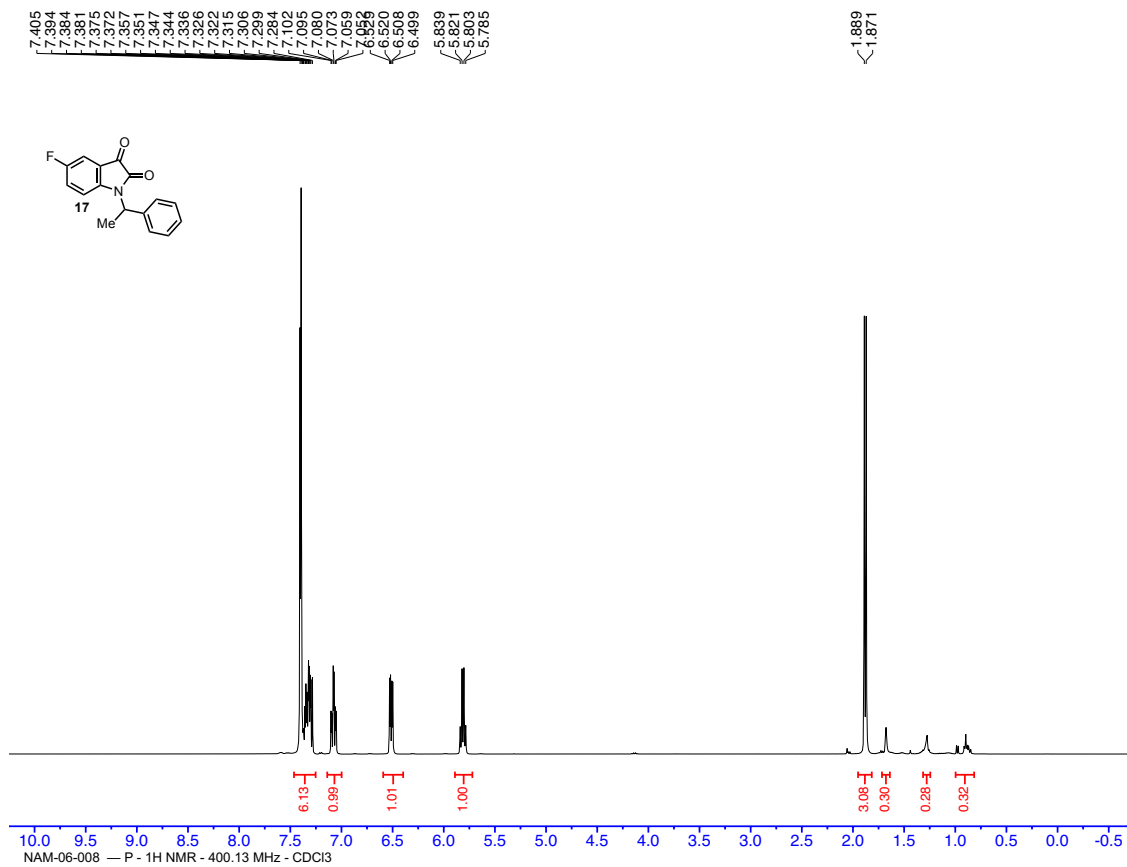
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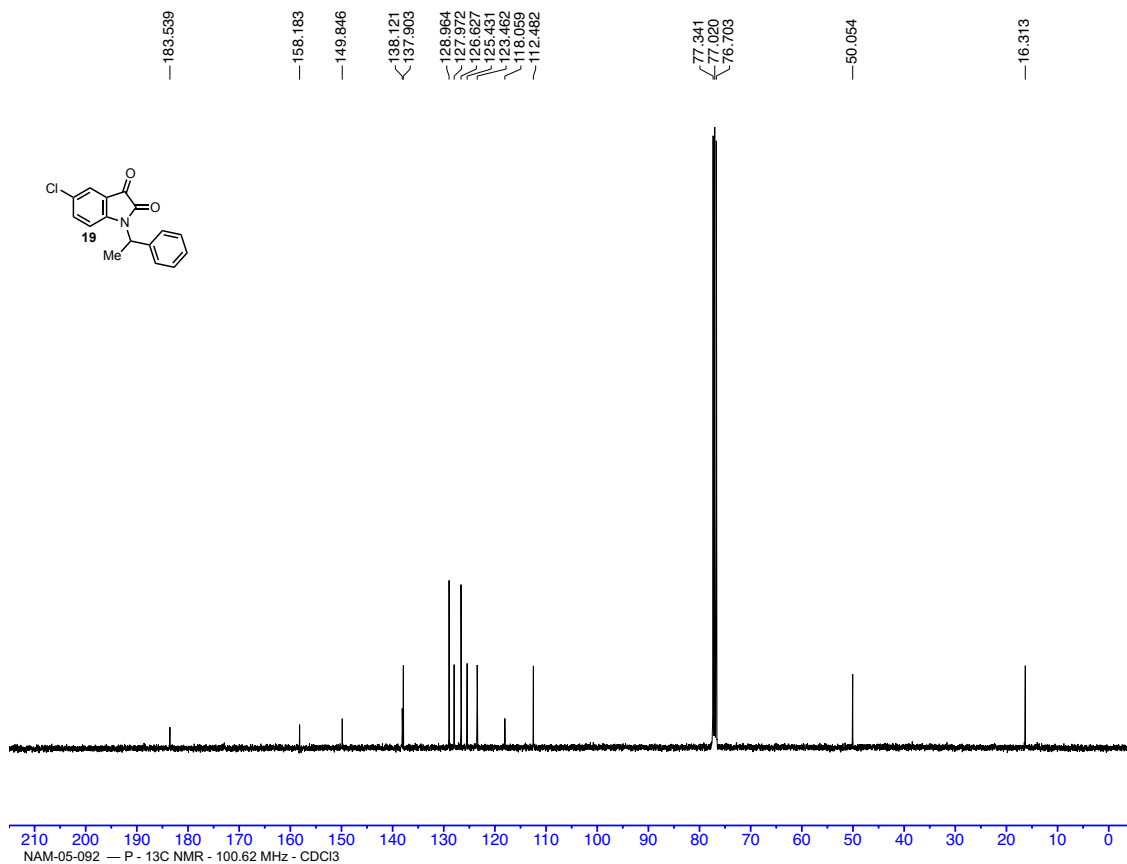
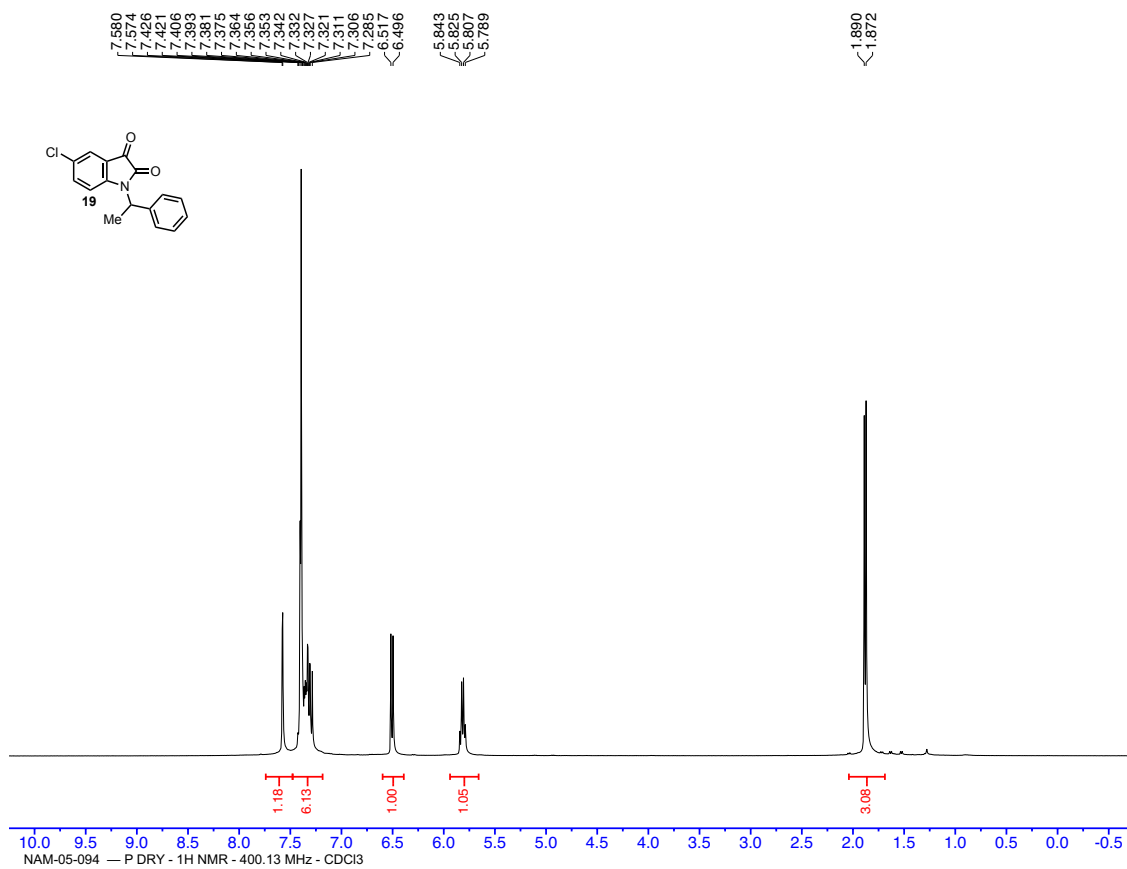
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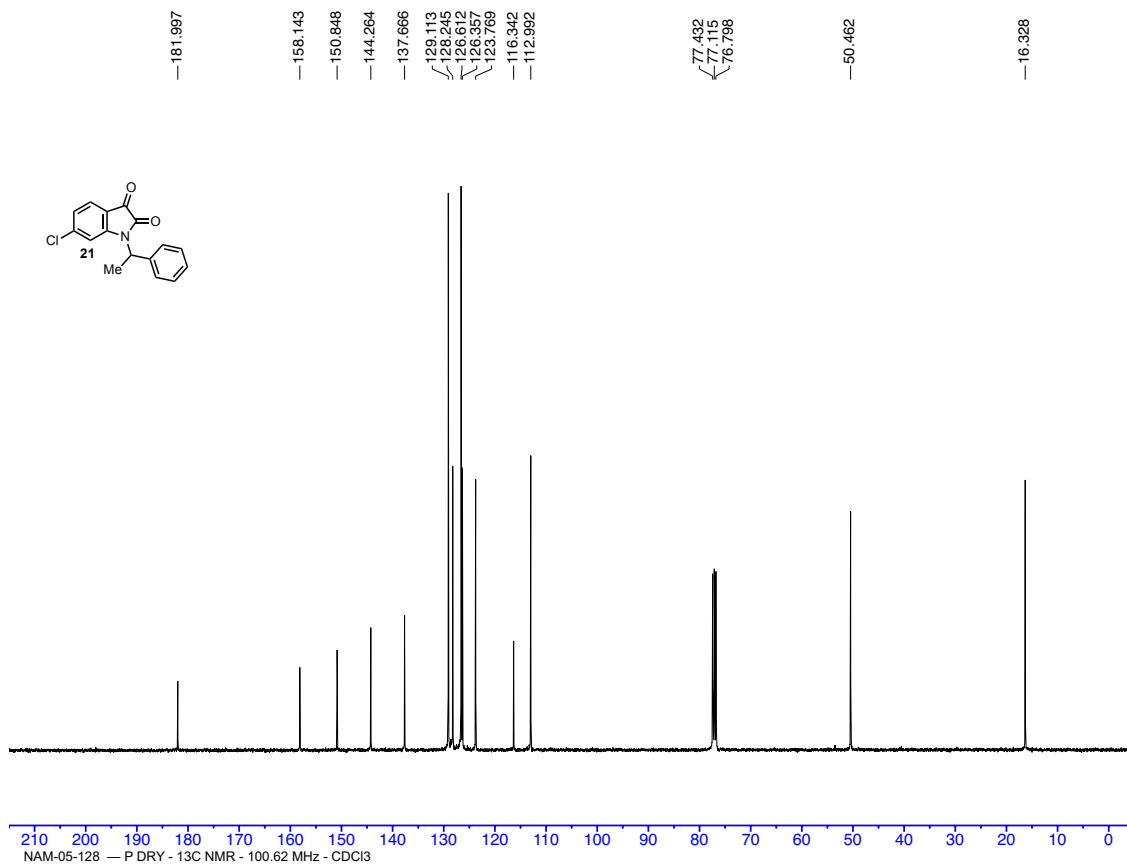
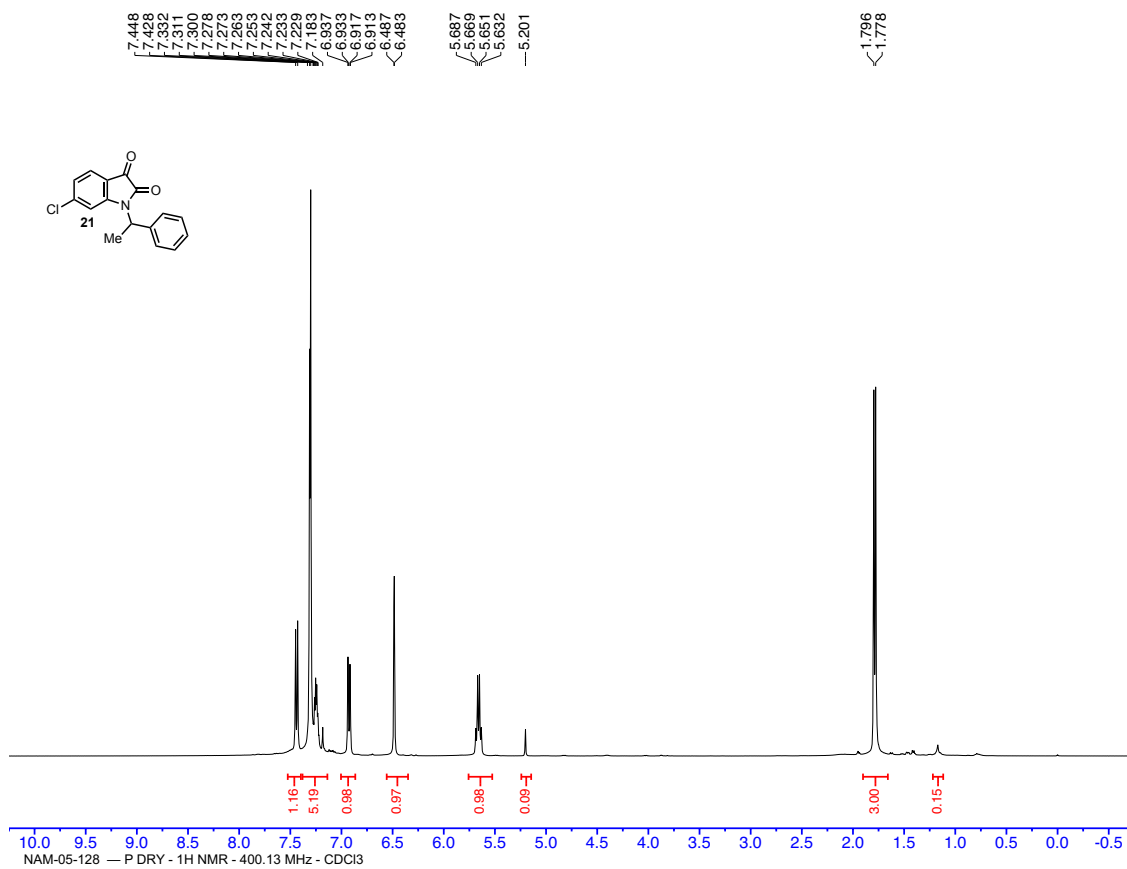
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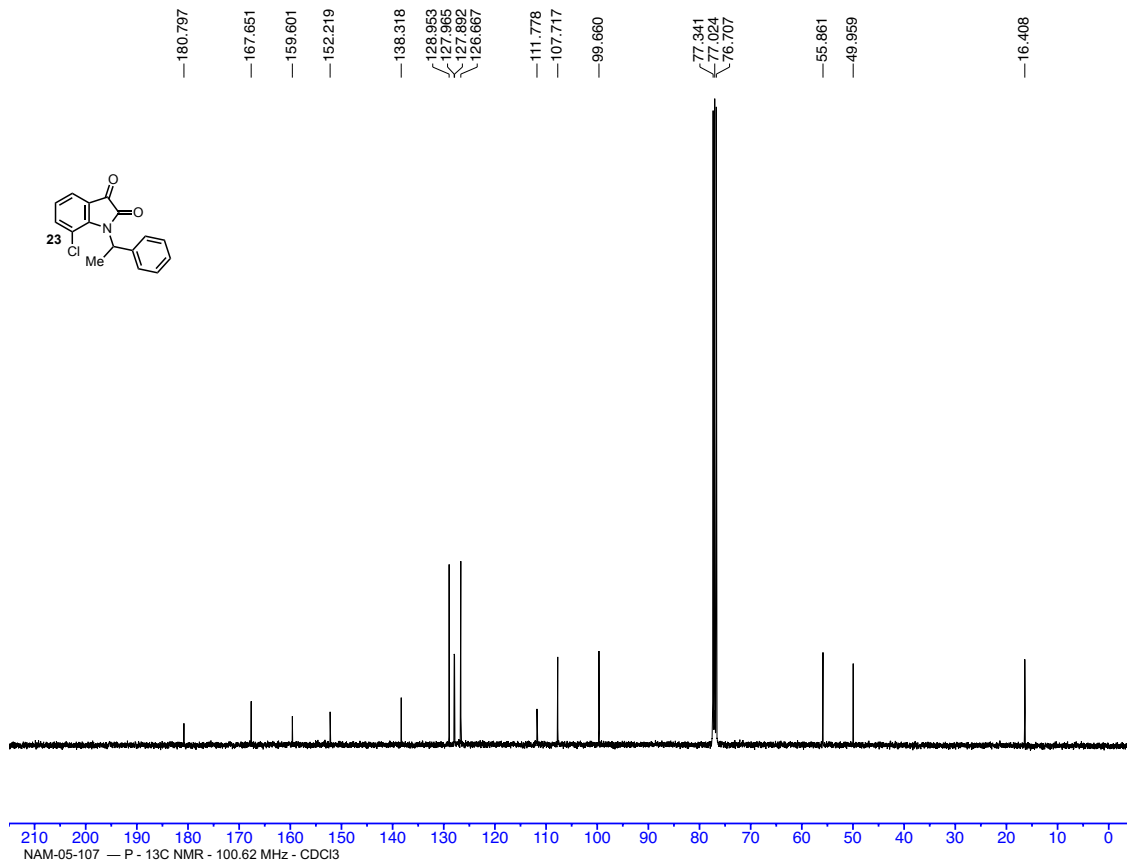
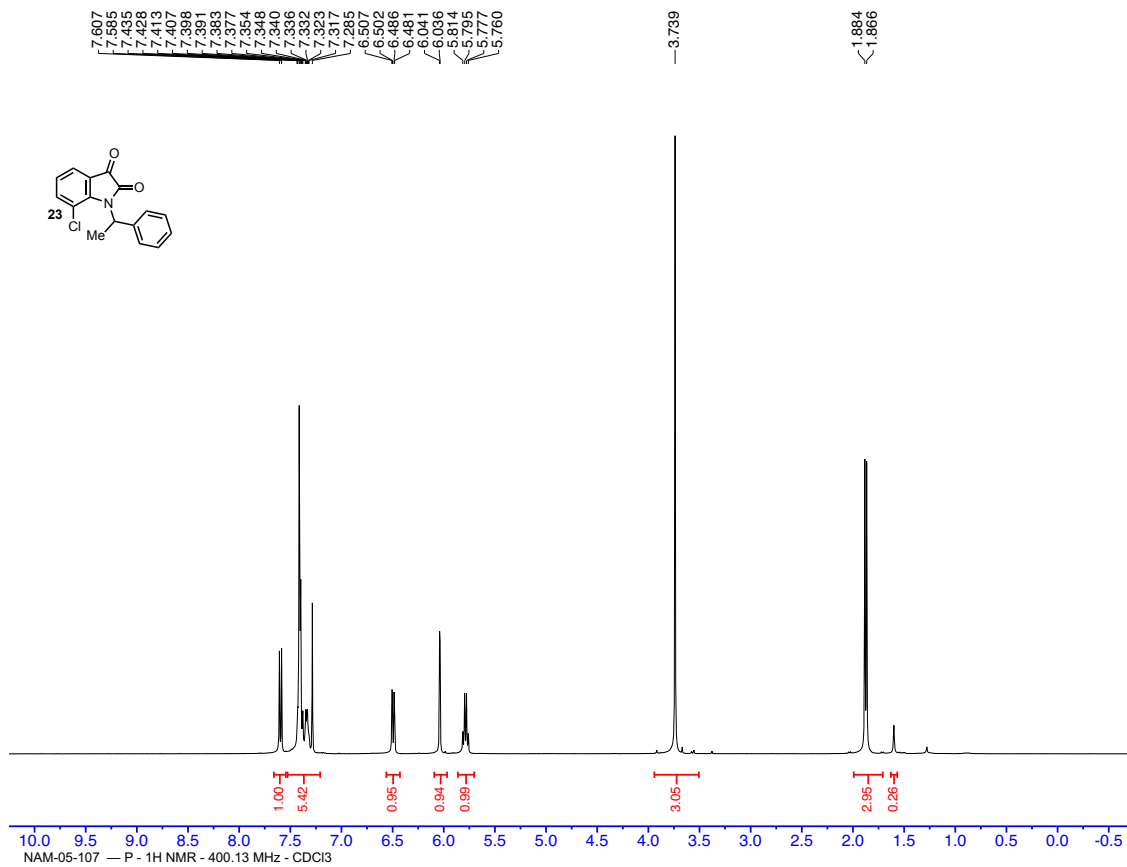


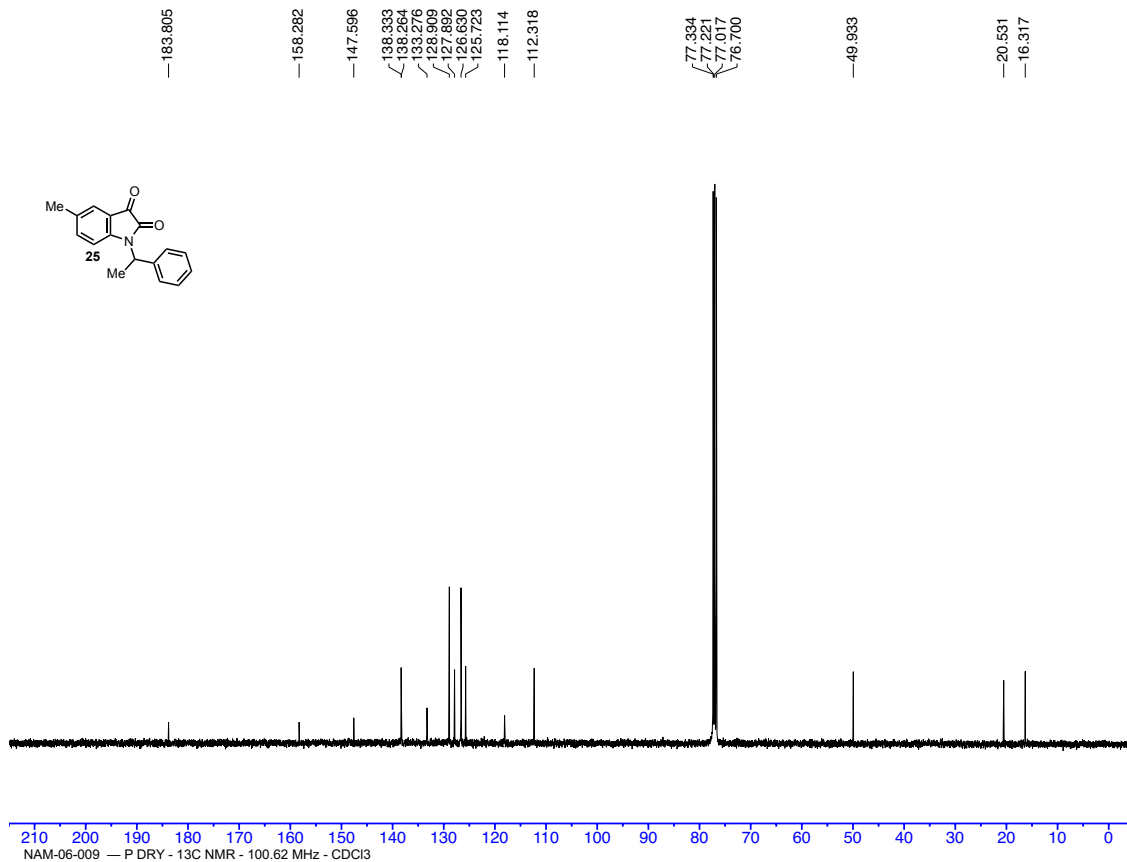
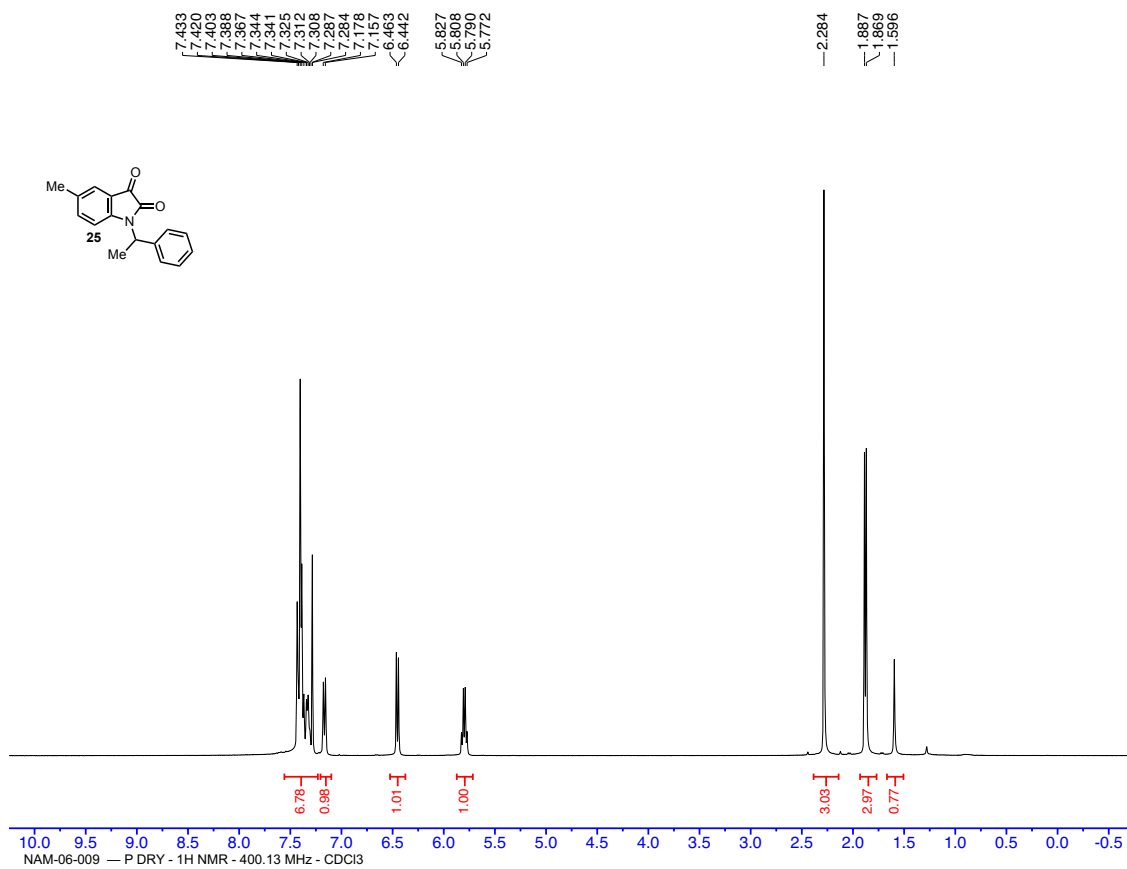


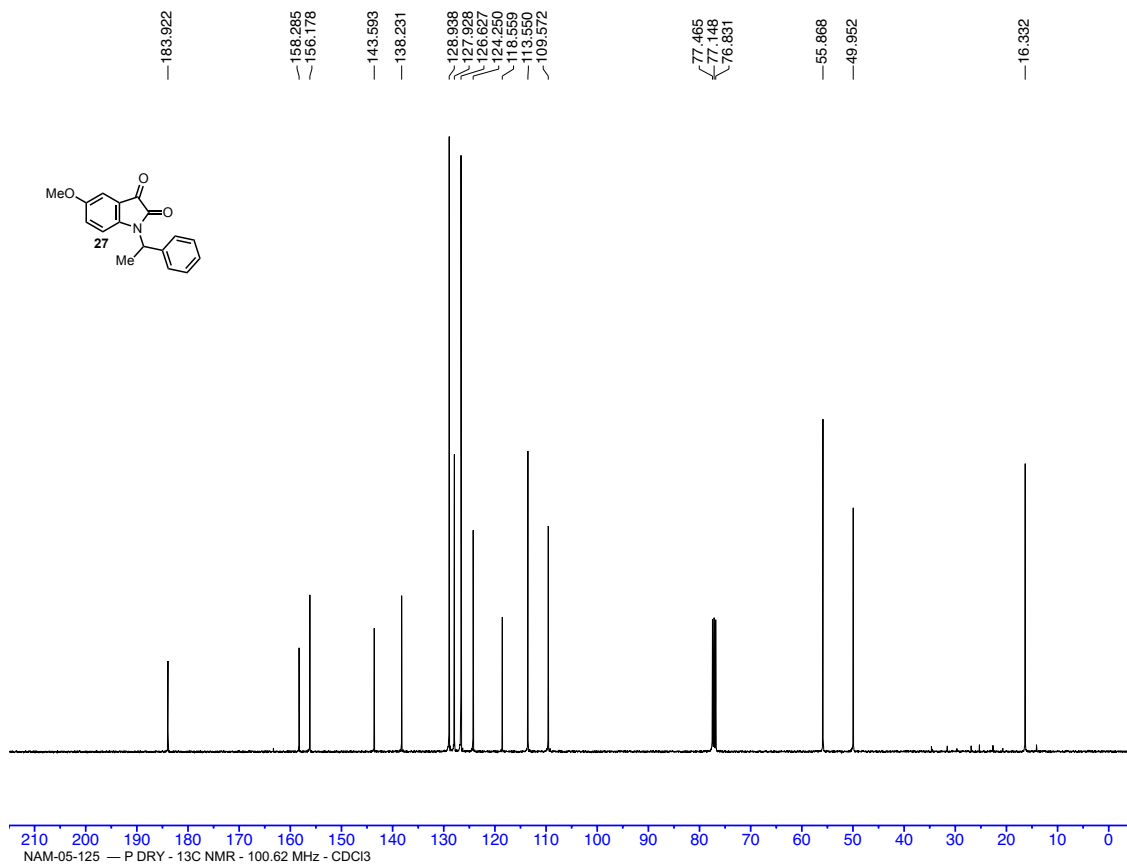
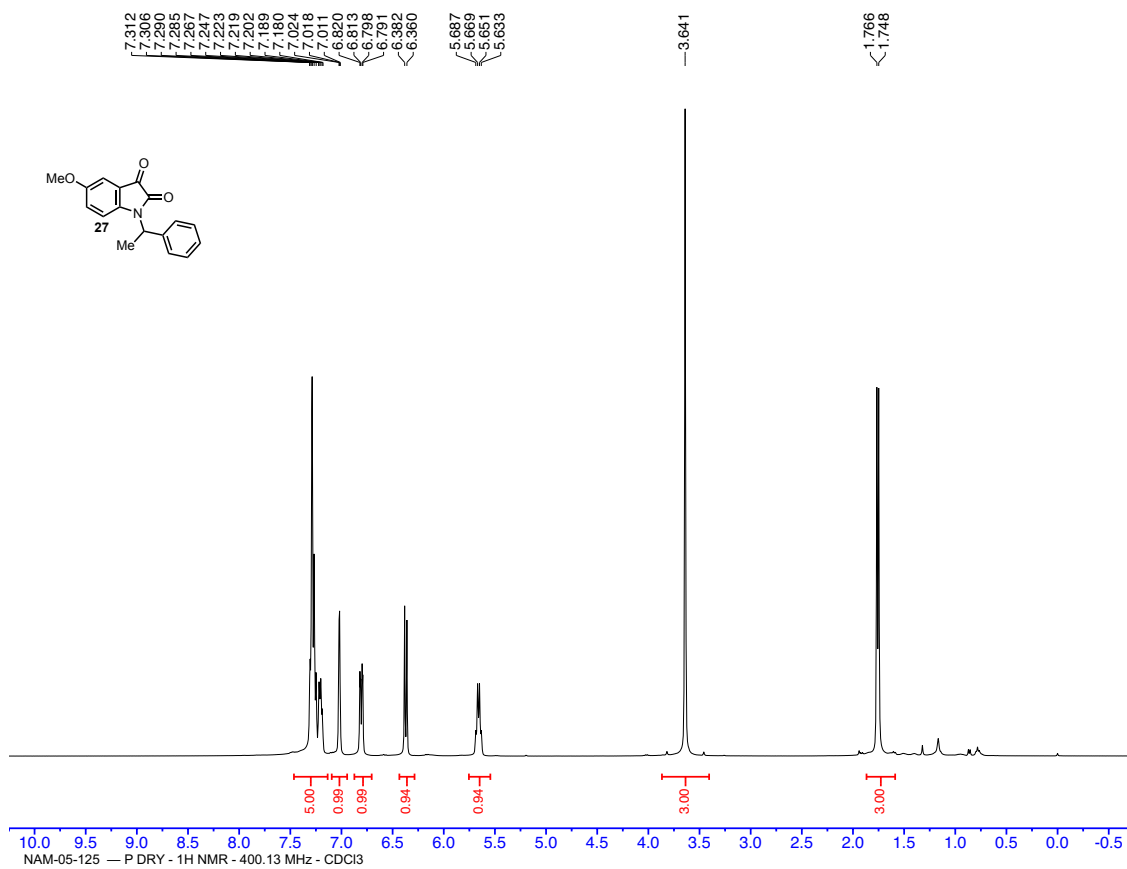


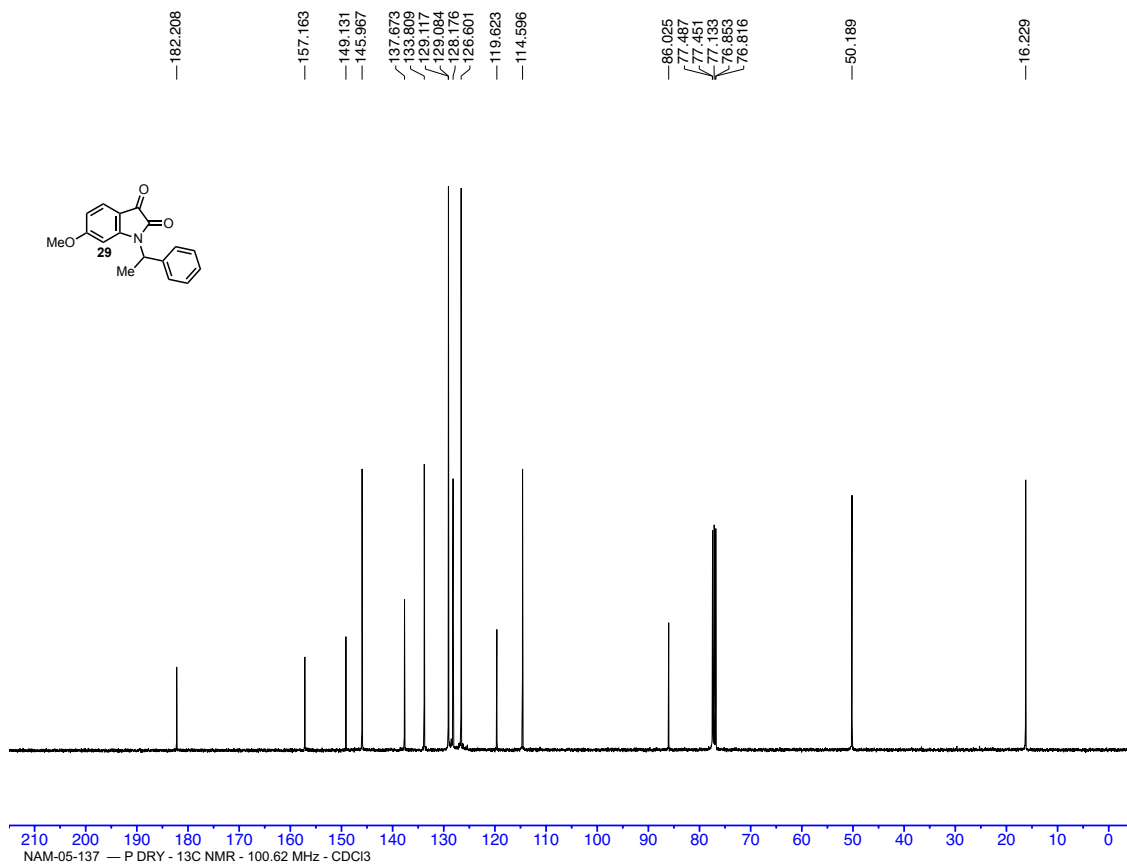
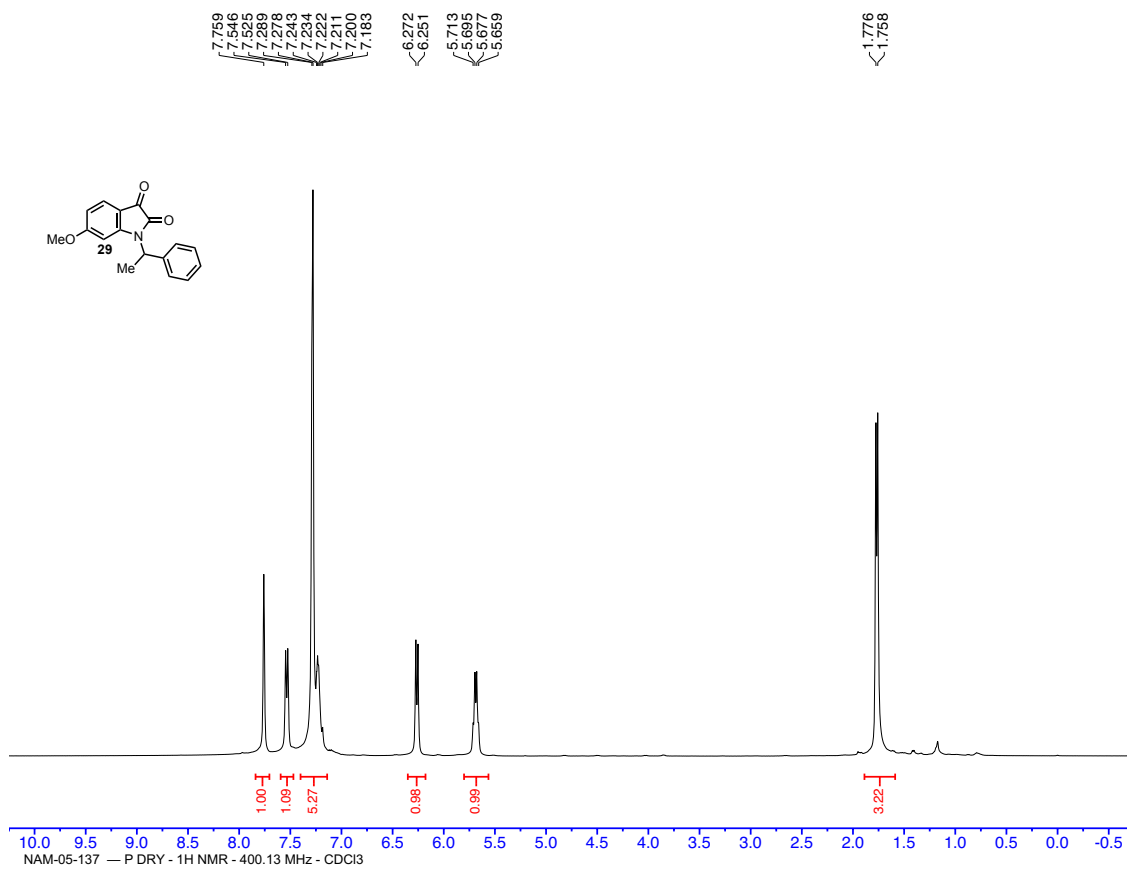


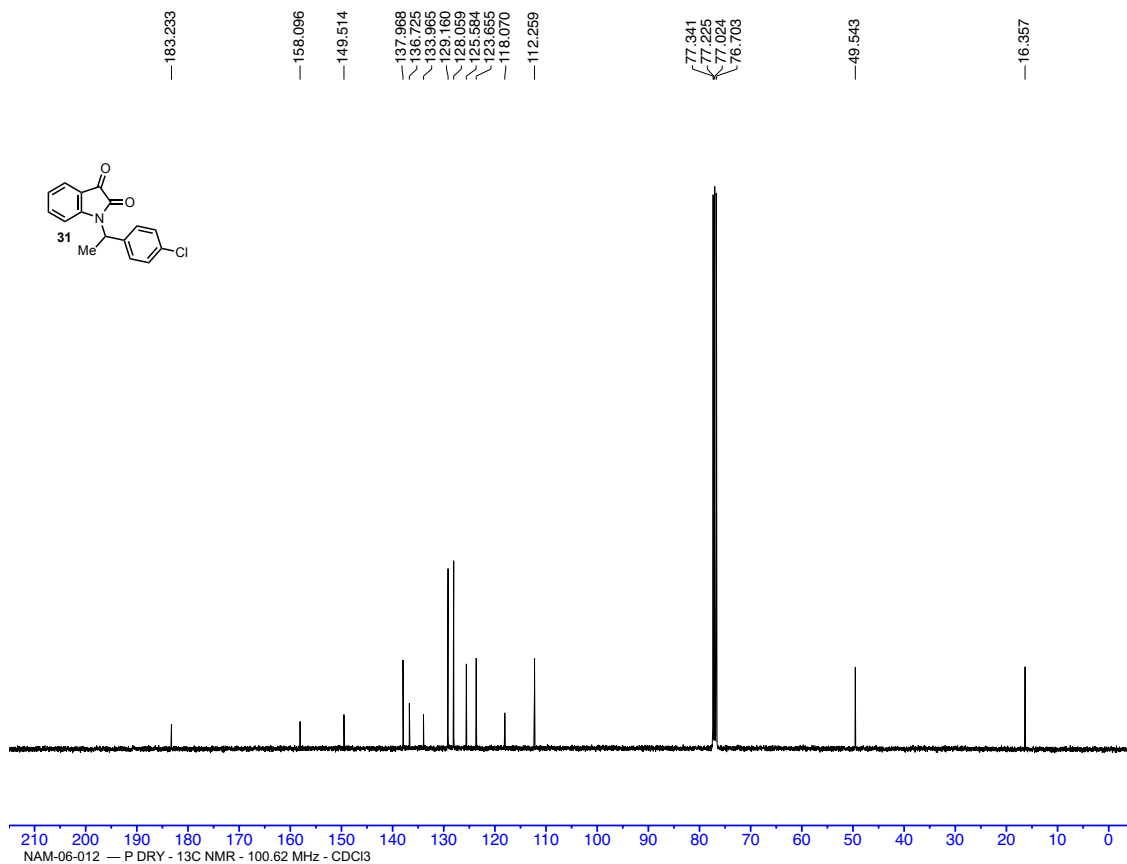
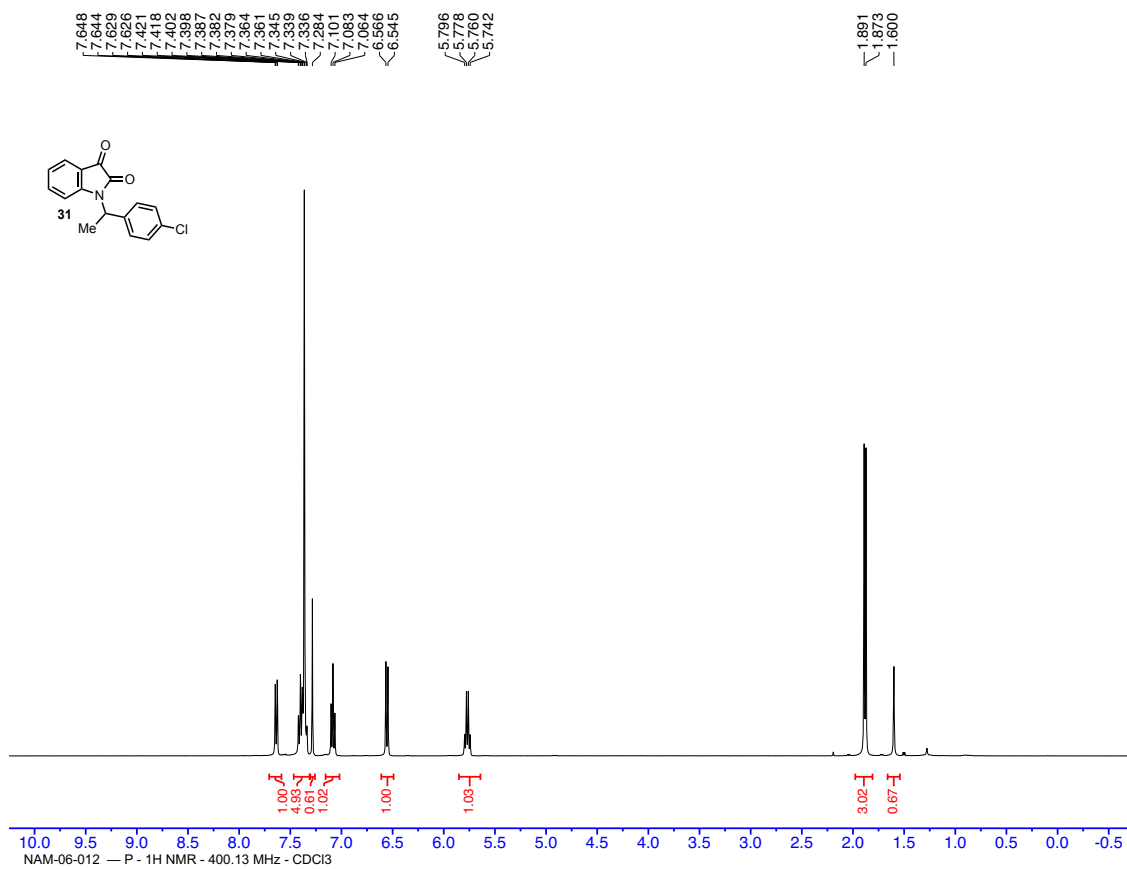


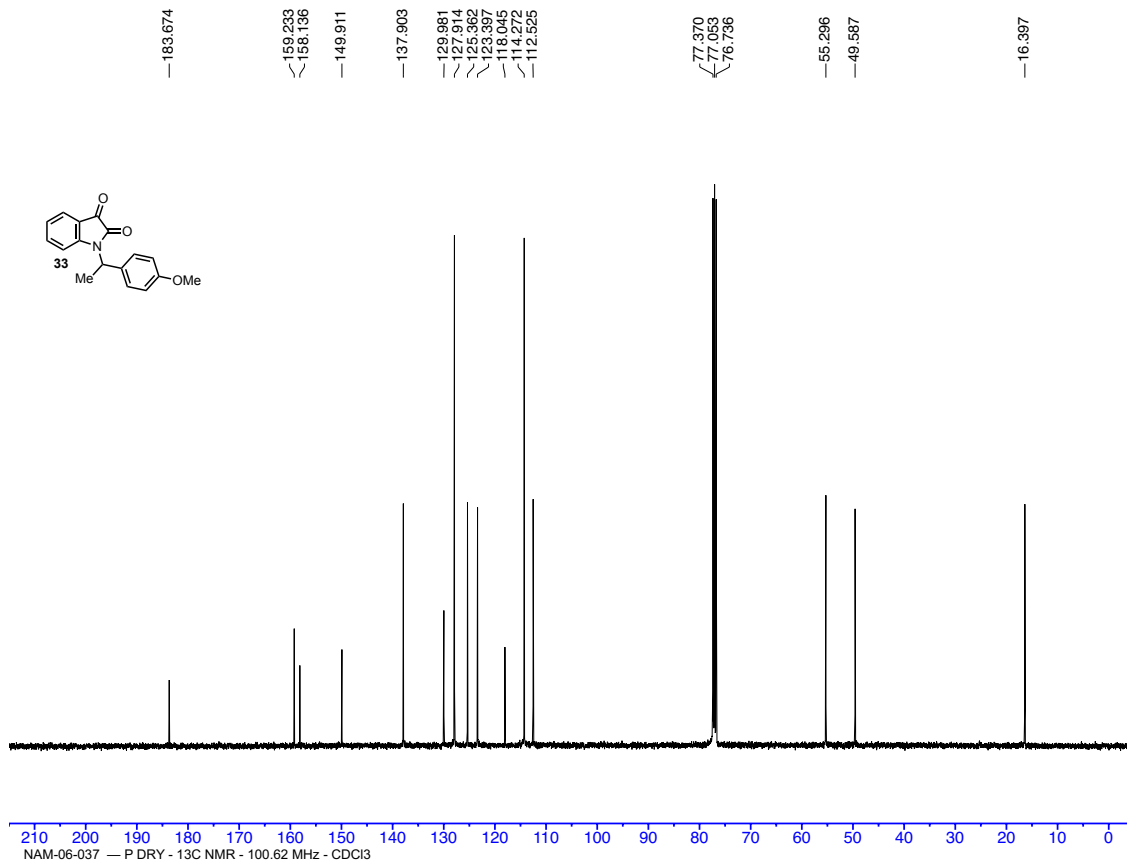
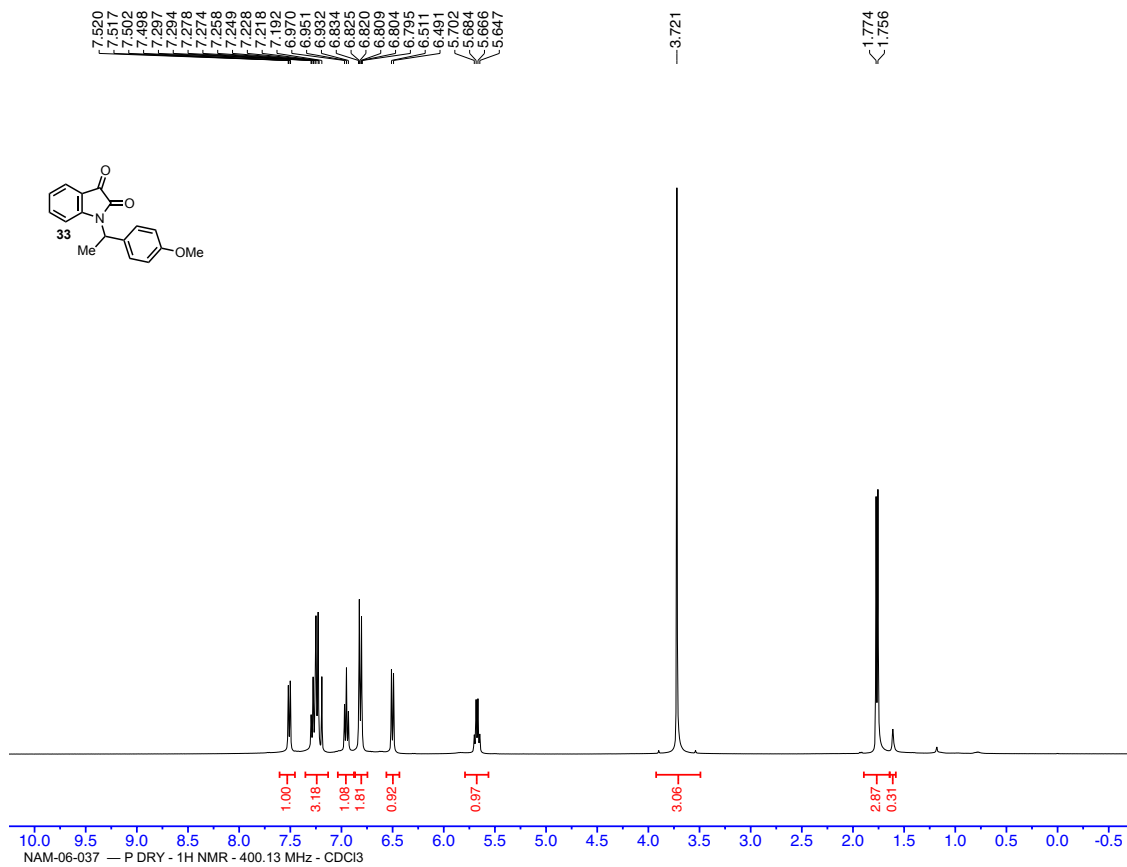


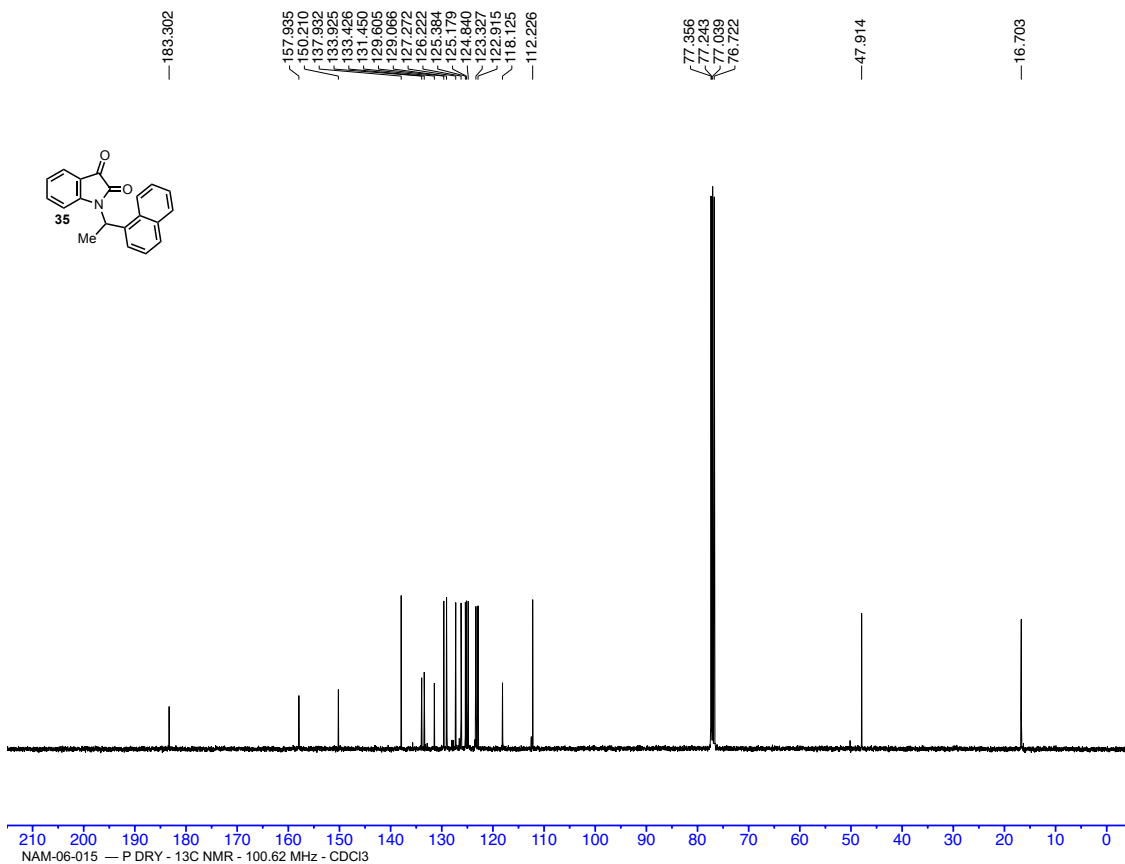
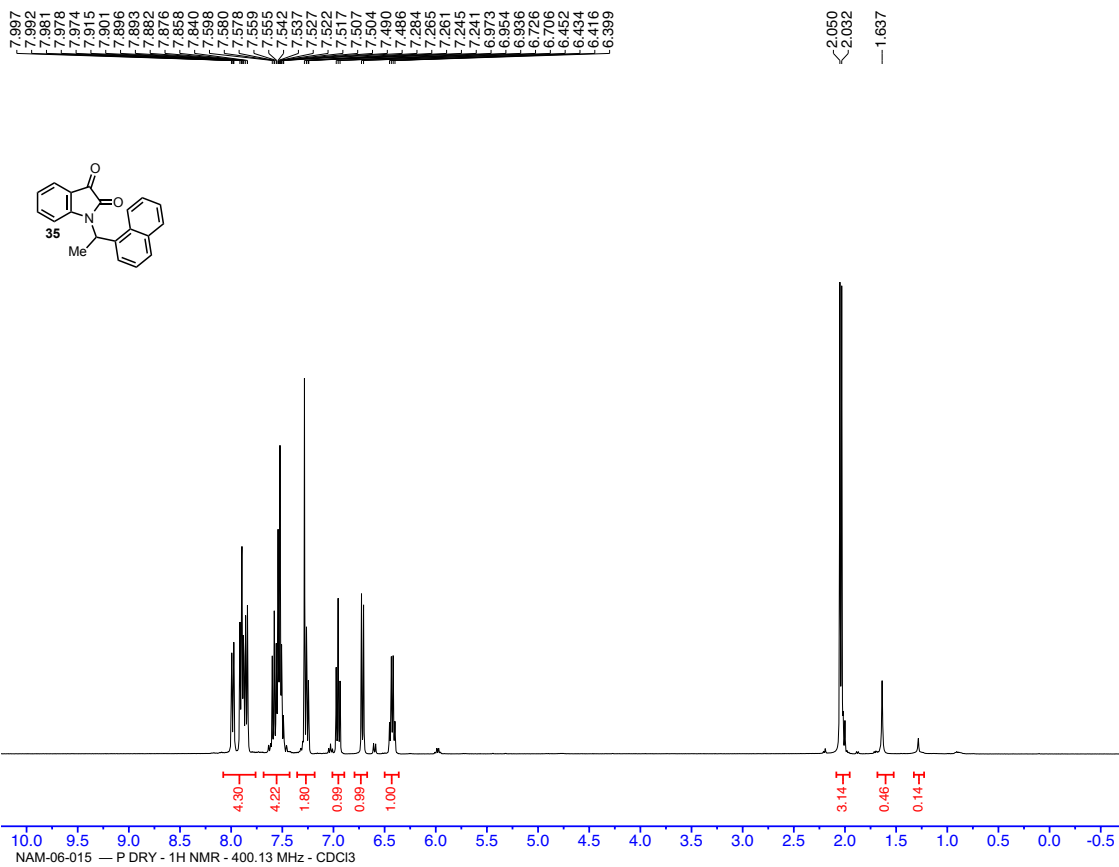


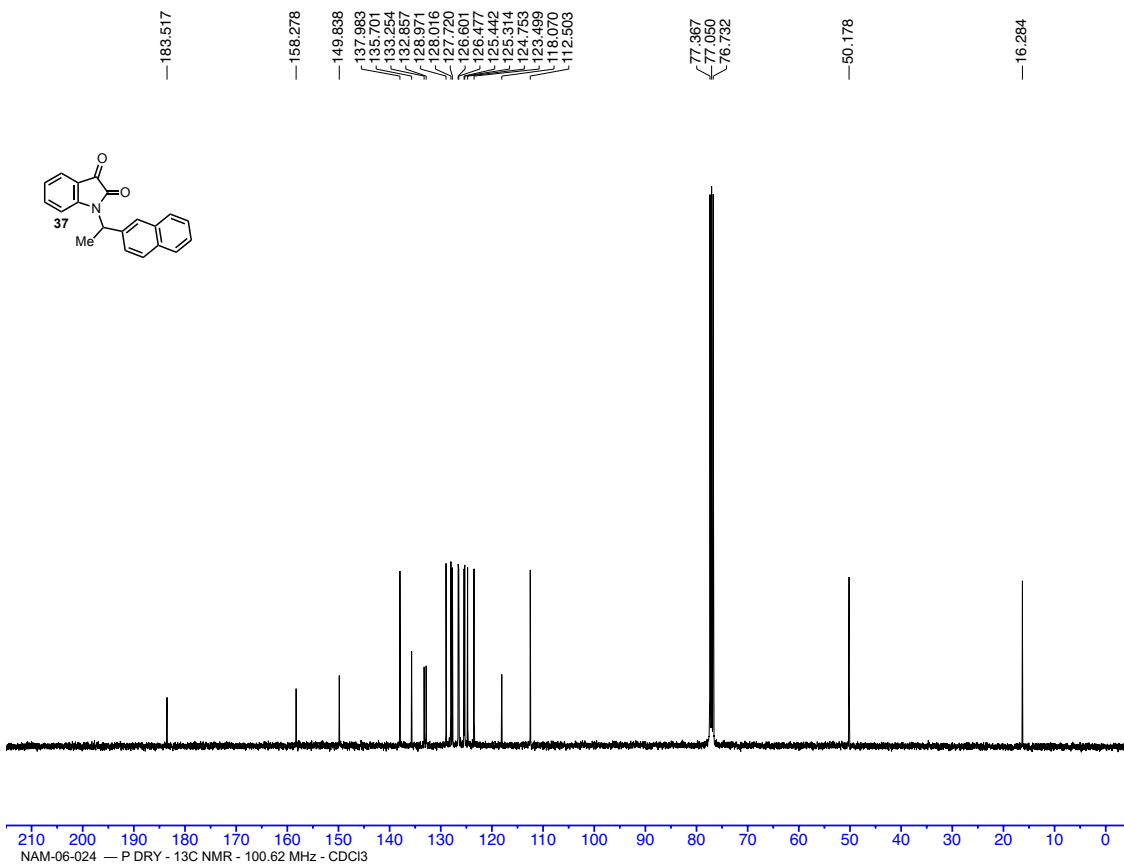
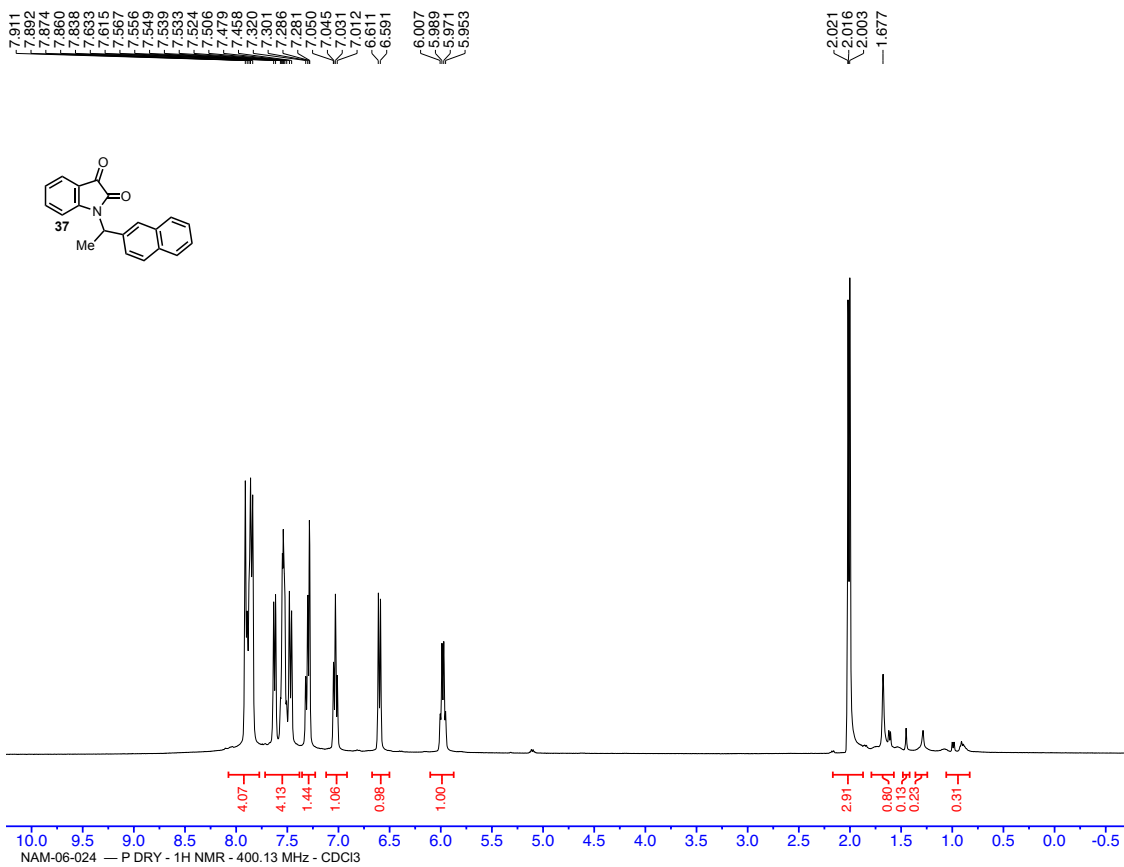


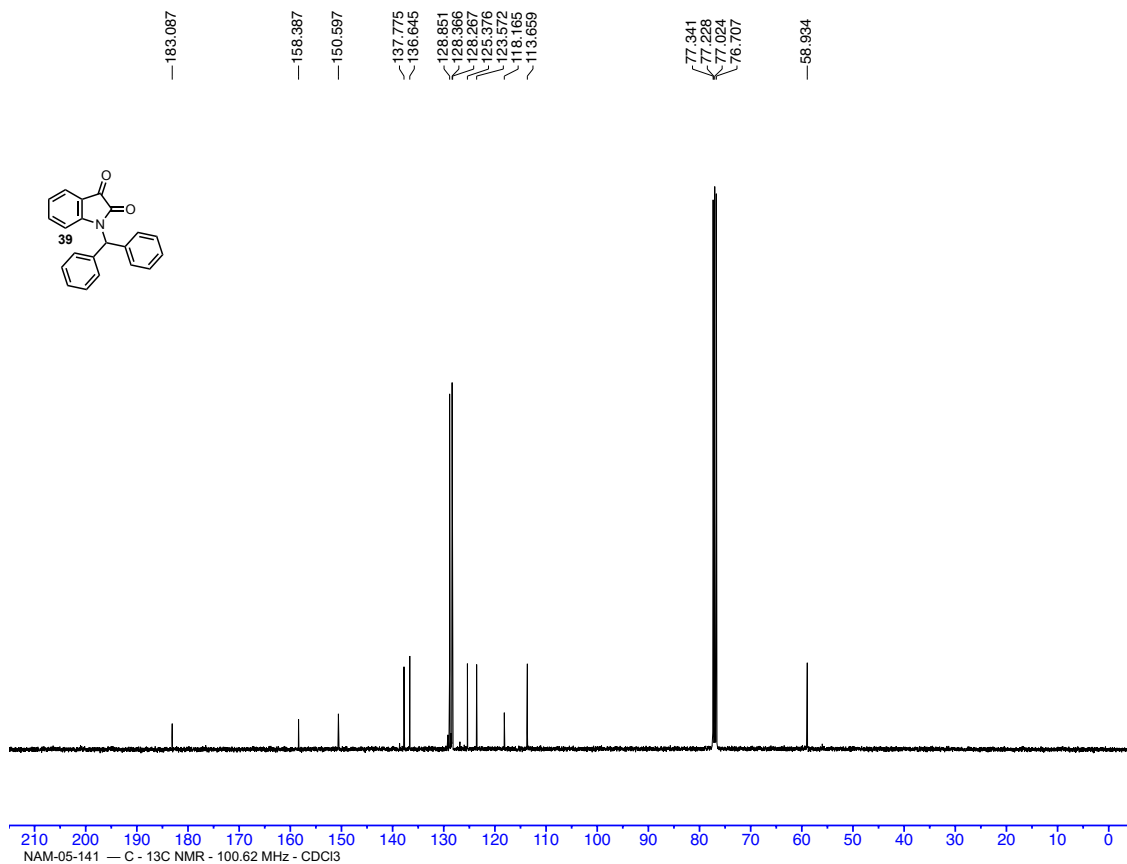
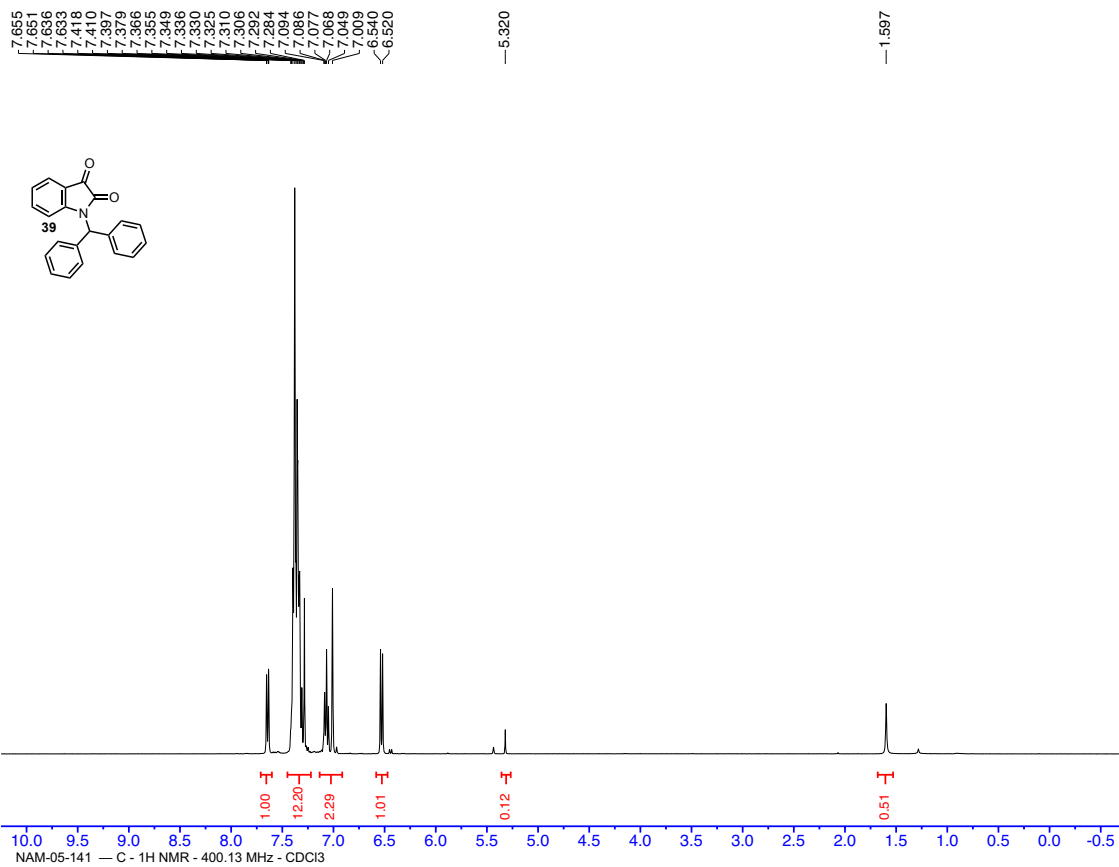


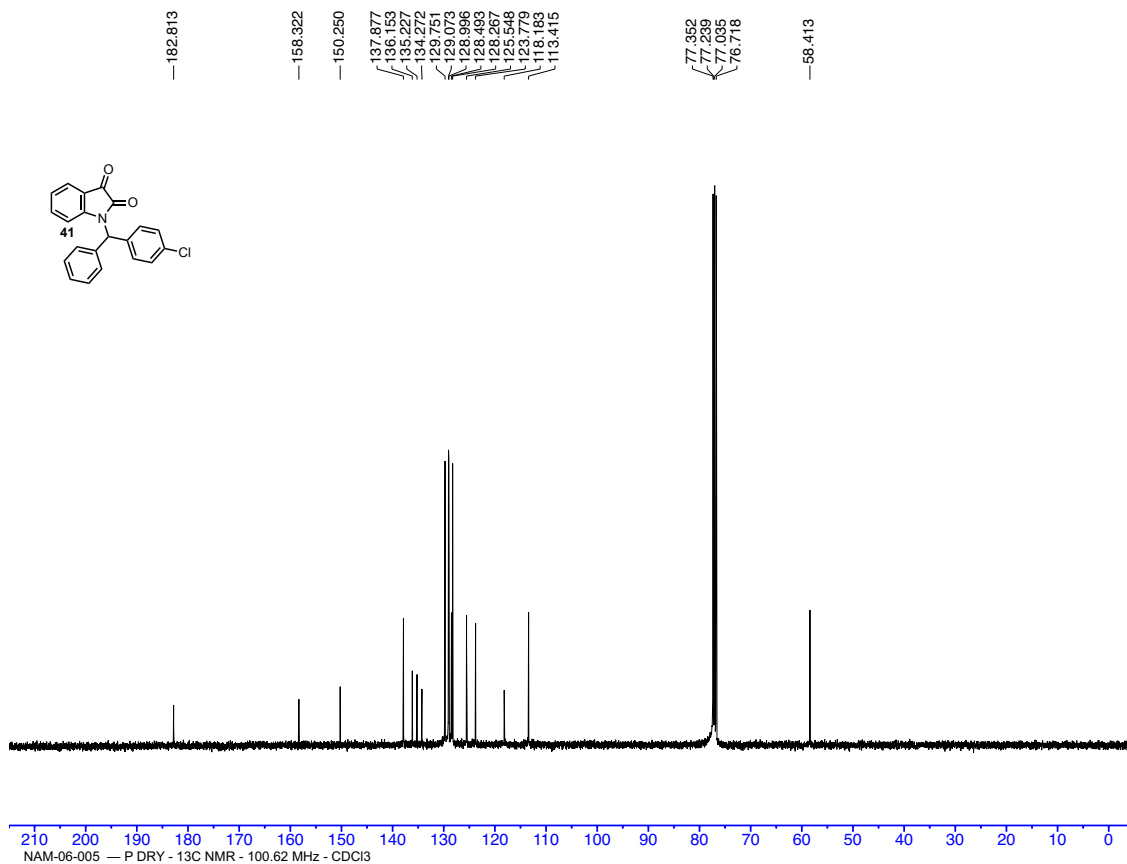
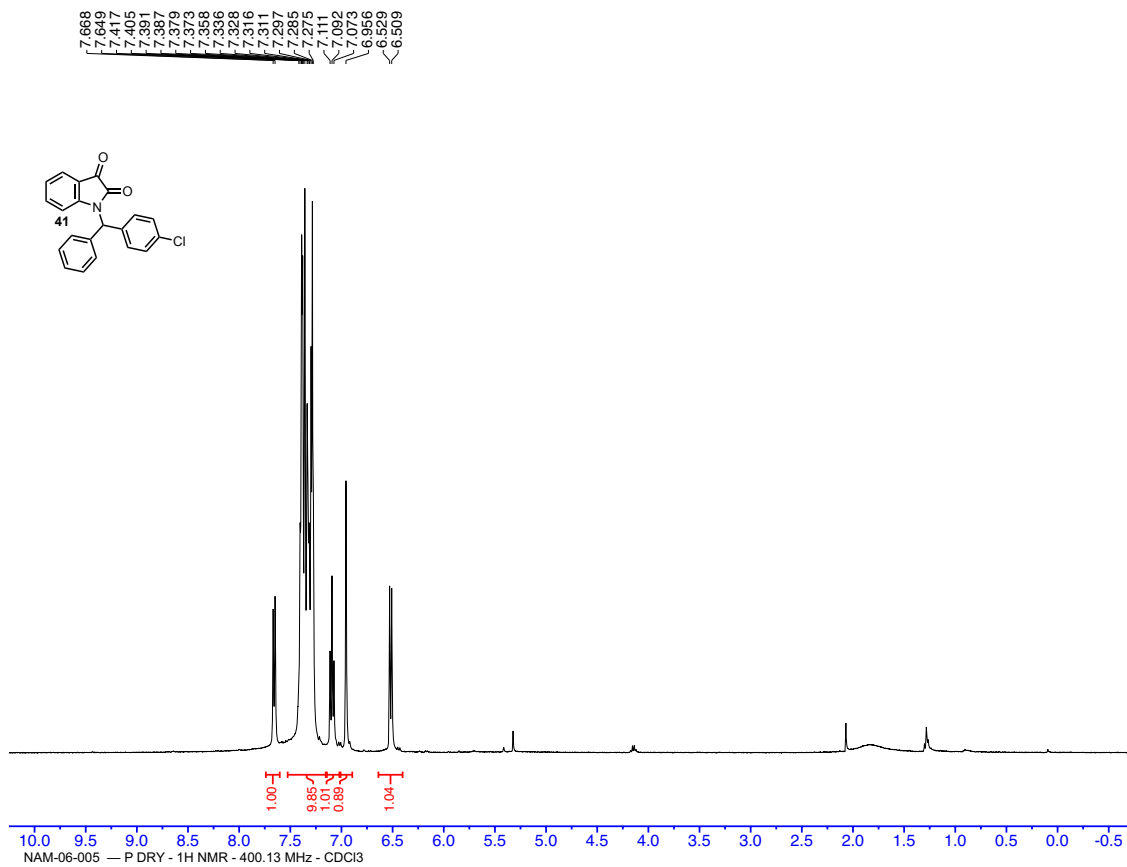


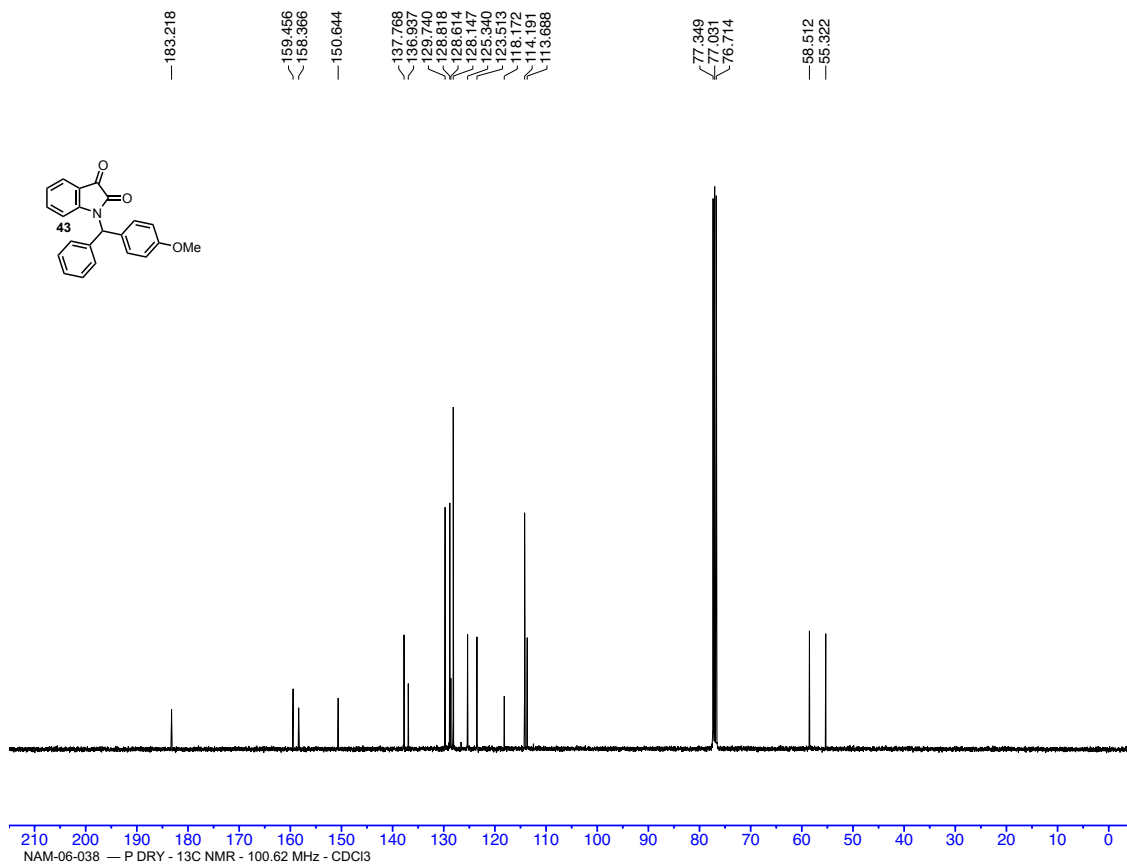
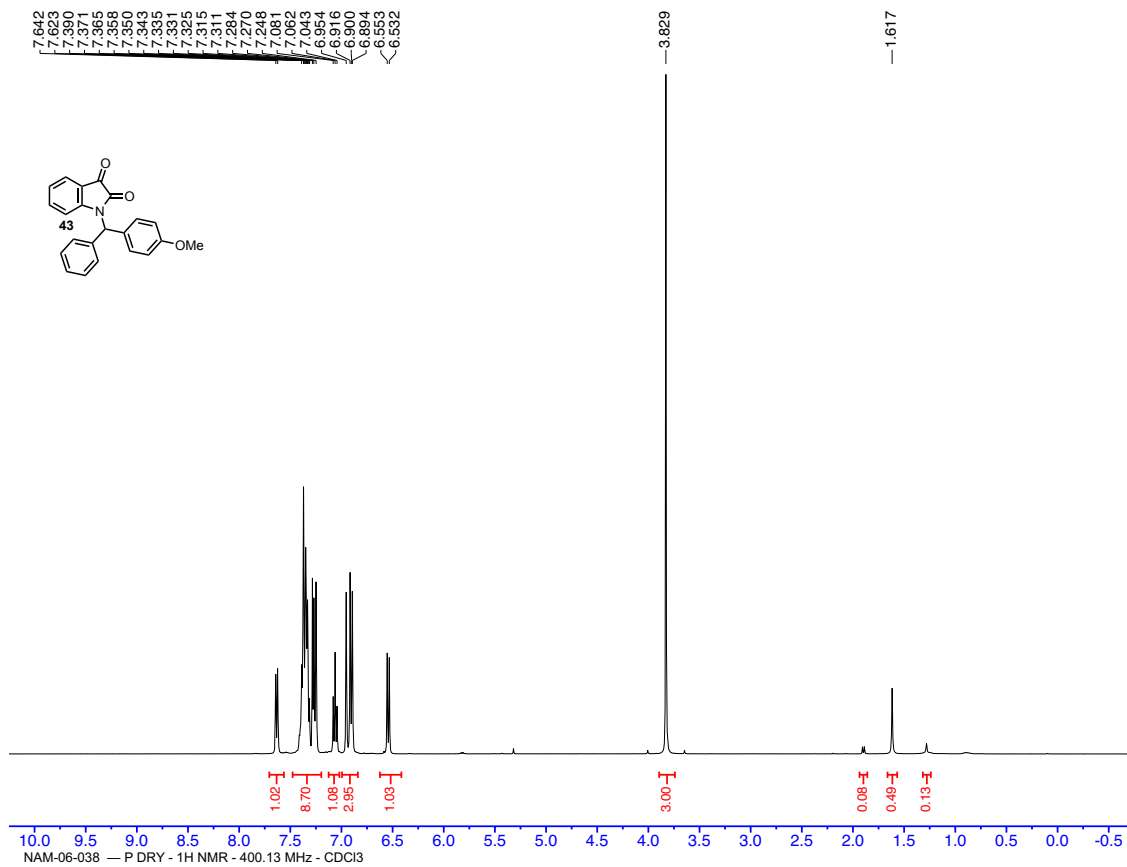


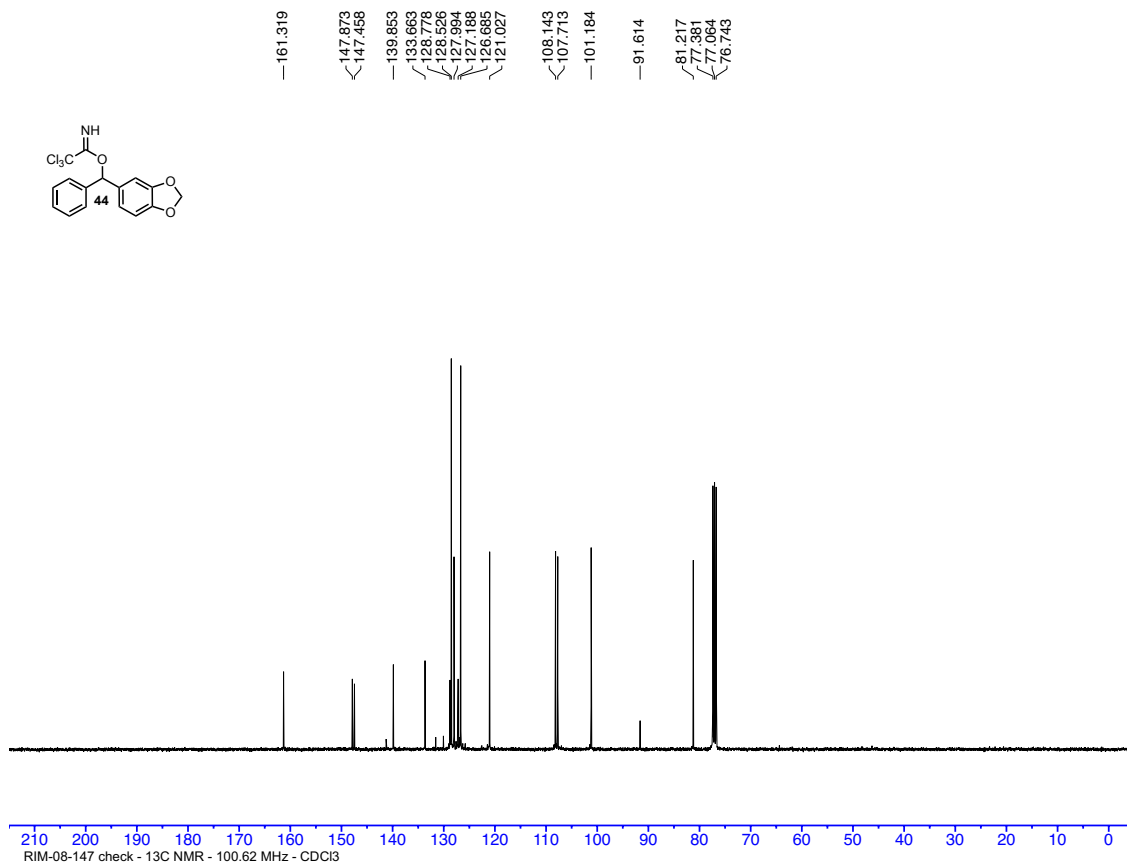
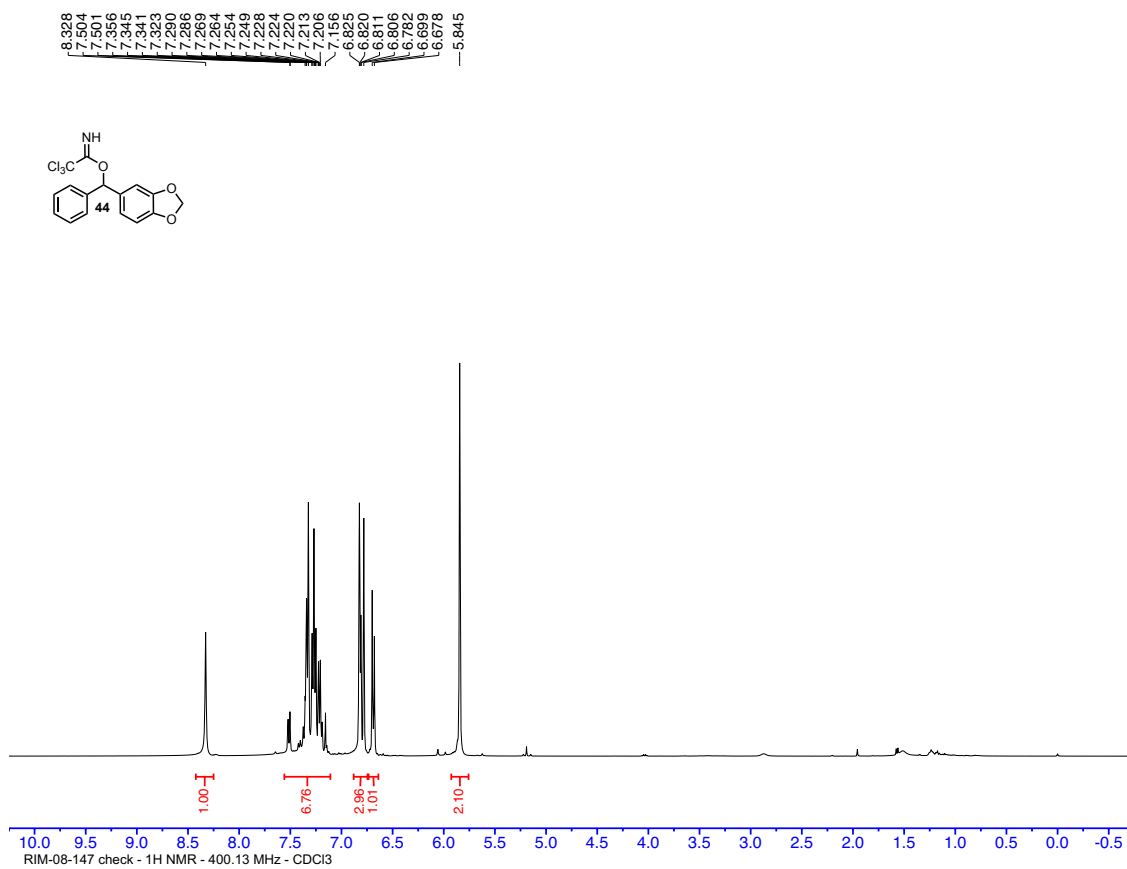


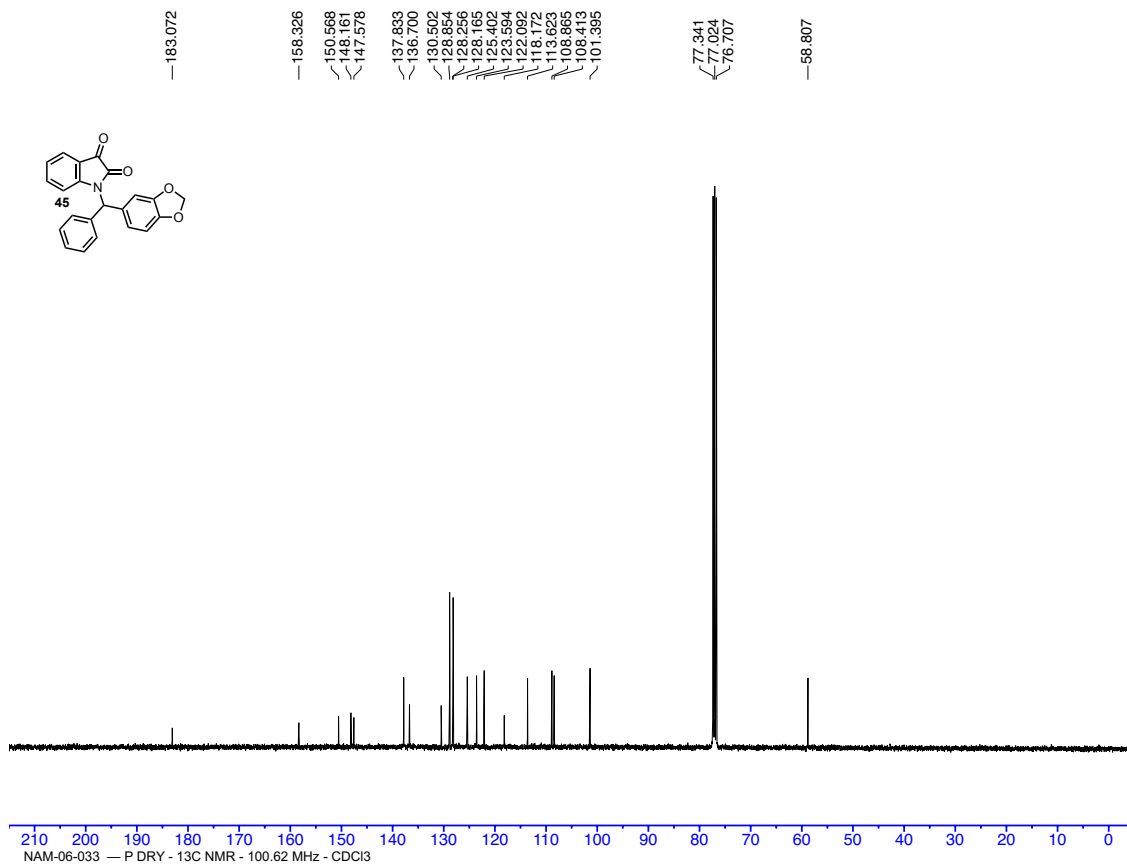
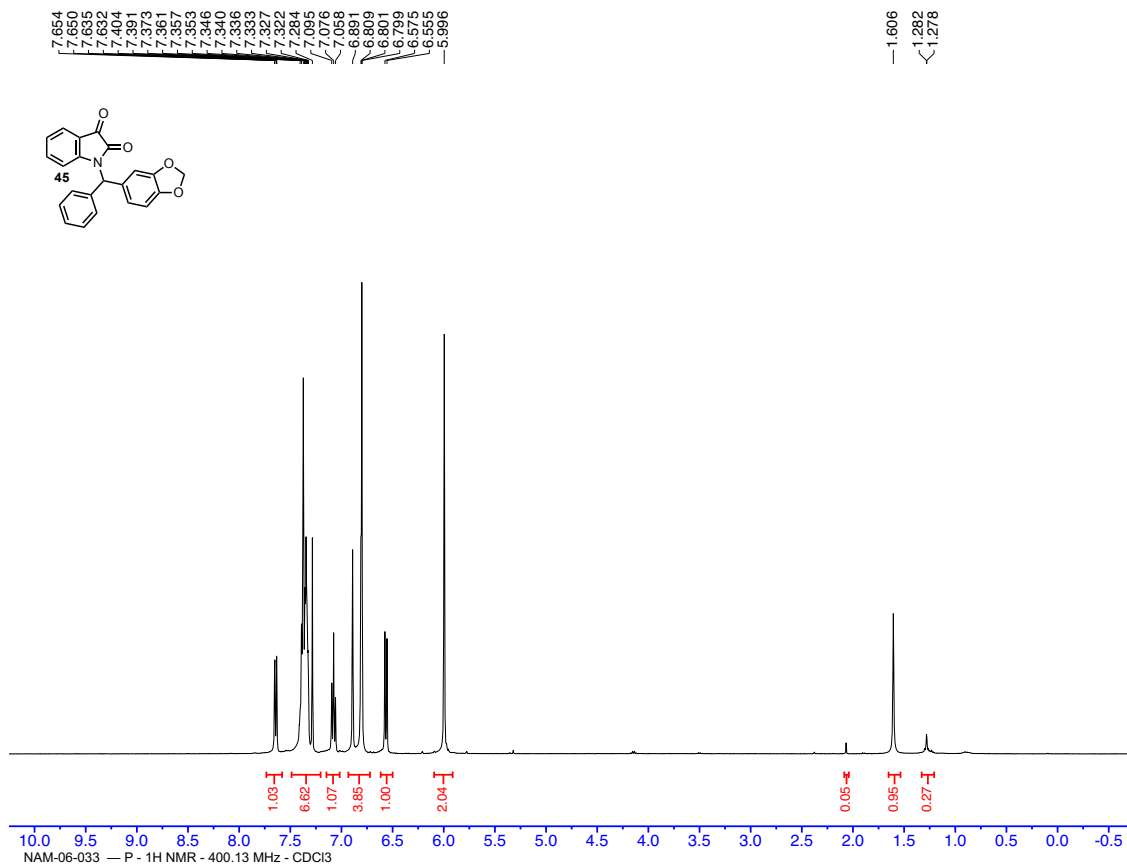


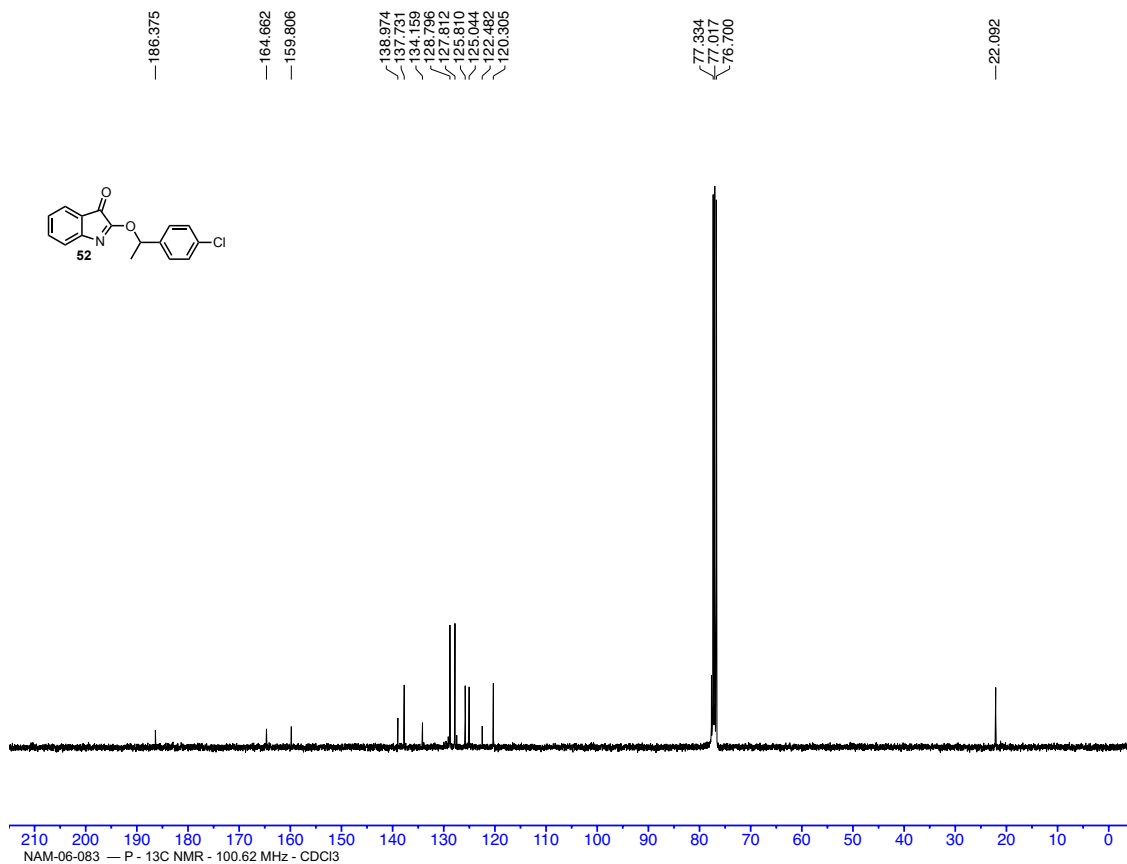
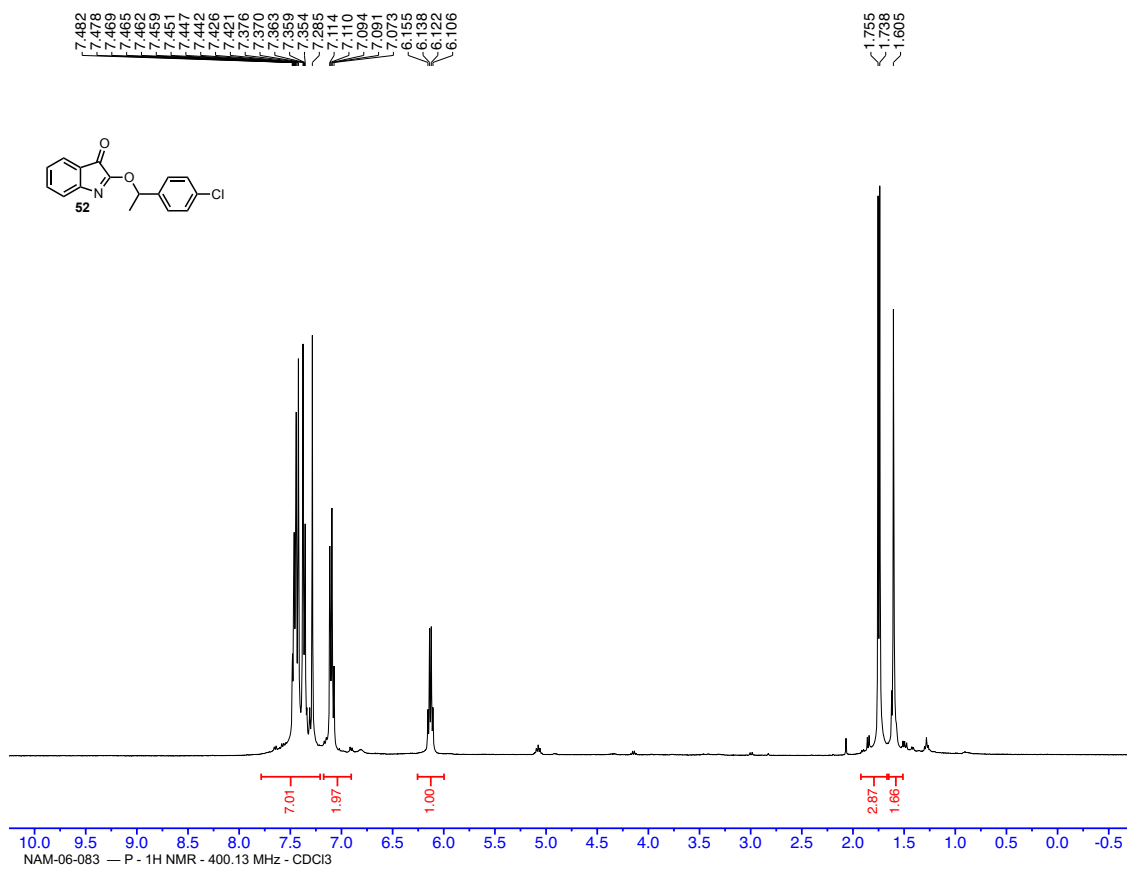












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