

Supporting Information

ONE-STEP SYNTHESIS OF 4*H*-3,1-BENZOXAZIN-4-ONES FROM WEINREB AMIDES AND 1,4,2-DIOXAZOL-5-ONES VIA COBALT-CATALYZED C–H BOND ACTIVATION

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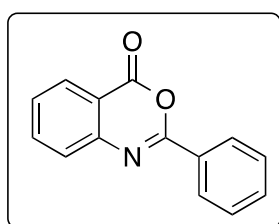
Experimental

General. Infrared (IR) spectra were recorded on a JASCO FT/IR4100 spectrophotometer and absorbance bands are reported in wave numbers (cm⁻¹). ¹H and ¹³C NMR spectra were recorded on JEOL JNM-ECX400P spectrometer, JEOL JNM-ECS400 spectrometer, or JEOL JNM-ECA500 spectrometer. Chemical shifts were reported in the scale relative to TMS (0.00 ppm for ¹H NMR), CHCl₃ (7.26 ppm for ¹H NMR), CDCl₃ (77.0 ppm for ¹³C NMR), C₆H₅D (7.16 ppm for ¹H NMR), and C₆D₆ (128.0 ppm for ¹³C NMR), respectively. ESI-MS spectra were obtained on JEOL JMS-T100LC AccuTOF. Silica gel column chromatography was performed with Kanto Silica gel 60 N (40-50 mesh). 1,2-Dichloroethane (Wako Ltd., deoxidized grade) was stored over activated molecular sieves 3A or 4A under argon atmosphere before use. Cp*Co(CO)I₂ was synthesized according to the literature.¹ Acetic anhydride was distilled before use. All Weinreb amide derivatives **2**, *O*-methyl hydroxamate **5** and morpholine amide **6** were prepared from corresponding carboxylic acid or acyl chloride and *N,O*-dimethylhydroxylamine hydrochloride. All dioxazolone derivatives were synthesized according to the literature.² All other reagents were commercially available and used as received.

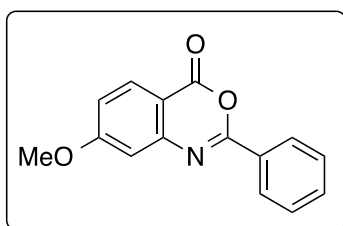
General procedure of Cp*Co^{III}-catalyzed one-step synthesis of benzoxazinone (for liquid substrate: **2a-2d, **2g-2l**):** To a dried screw-capped vial equipped with a stirring bar were added Cp*Co(CO)I₂ (14.3 mg, 0.030 mmol, 10 mol %), AgSbF₆ (20.6 mg, 0.060 mmol, 20 mol %), and **3** (97.9 mg, 0.60 mmol, 2.0 equiv.) under argon atmosphere in a glovebox. The vial was charged with DCE (1.0 mL) followed by Ac₂O (28.4 μL, 0.30 mmol) and **2** (0.30 mmol). The mixture was stirred at room temperature for 15 min in the glovebox. The vial was capped, taken out of the glovebox, and the mixture was heated at 80 °C for 18 h with stirring. After the mixture was cooled to room temperature and diluted with CH₂Cl₂, saturated aqueous EDTA•2Na was added. The mixture was extracted with CH₂Cl₂ two times, and the combined

organic layers were dried over Na₂SO₄. After filtration and evaporation, the obtained crude mixture was purified by silica gel column chromatography (toluene/hexane/EtOAc = 60/10/1) to afford **1**.

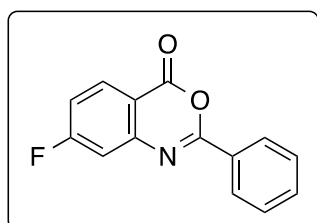
General procedure of Cp*Co^{III}-catalyzed one-step synthesis of benzoxazinone (for solid substrate: **2e, **2f**):** To a dried screw-capped vial equipped with a stirring bar were added Cp*Co(CO)I₂ (14.3 mg, 0.030 mmol, 10 mol %), AgSbF₆ (20.6 mg, 0.060 mmol, 20 mol %), **3** (97.9 mg, 0.60 mmol, 2.0 equiv.), and **2** (0.30 mmol) under argon atmosphere in a glovebox. After the addition of DCE (1.0 mL) and Ac₂O (28.4 μL, 0.30 mmol), the mixture was stirred at room temperature for 15 min in the glovebox. The vial was capped, taken out of the glovebox, and the mixture was heated at 80 °C for 18 h with stirring. After the mixture was cooled to room temperature and diluted with CH₂Cl₂, saturated aqueous EDTA•2Na was added. The mixture was extracted with CH₂Cl₂ two times, and the combined organic layers were dried over Na₂SO₄. After filtration and evaporation, the obtained crude mixture was purified by silica gel column chromatography (toluene/hexane/EtOAc = 60/10/1) to afford **1**.



2-Phenyl-4H-benzo[d][1,3]oxazin-4-one (1aa): a colorless solid (84%); ¹H NMR (CDCl₃, 400 MHz) δ 8.35–8.29 (m, 2H), 8.25 (dd, *J* = 7.7 Hz, 1.4 Hz, 1H), 7.87–7.81 (m, 1H), 7.71 (d, *J* = 7.7 Hz, 1H), 7.62–7.49 (m, 4H); ¹³C NMR (CDCl₃, 125 MHz) δ 159.5, 157.0, 146.9, 136.5, 132.5, 130.1, 128.7, 128.5, 128.2, 128.2, 127.2, 116.9. (Reported compound.³)

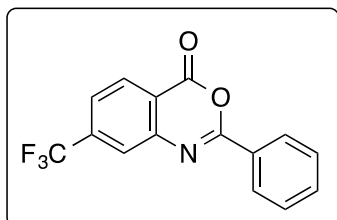


7-Methoxy-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ba): a colorless solid (83%); ¹H NMR (CDCl₃, 400 MHz) δ 8.34–8.29 (m, 2H), 8.15 (d, *J* = 8.7 Hz, 1H), 7.61–7.56 (m, 1H), 7.55–7.49 (m, 2H), 7.11 (d, *J* = 2.6 Hz, 1H), 7.06 (dd, *J* = 8.7 Hz, 2.6 Hz, 1H), 3.97 (s, 3H); ¹³C NMR (CDCl₃, 125 MHz) δ 166.2, 159.1, 157.9, 149.3, 132.5, 130.2, 130.1, 128.7, 128.2, 117.3, 109.7, 108.8, 55.8. (Reported compound.⁴)

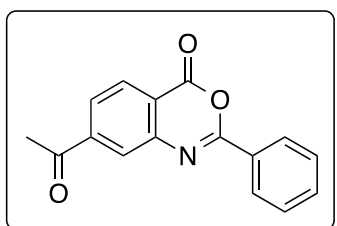


7-Fluoro-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ca): a colorless solid (81%); ¹H NMR (CDCl₃, 400 MHz) δ 8.34–8.29 (m, 2H), 8.27 (dd, *J* = 8.6 Hz, 5.9 Hz, 1H), 7.63–7.58 (m, 1H), 7.56–7.50 (m, 2H), 7.36 (dd, *J* = 9.3 Hz, 2.6 Hz, 1H), 7.23 (ddd, *J* = 9.1, 8.6 Hz, 2.6 Hz, 1H); ¹³C NMR (CDCl₃, 125 MHz)

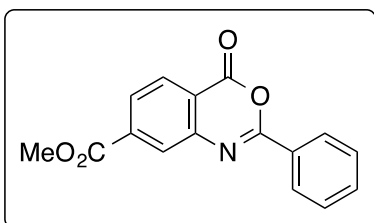
δ 167.7 (d, $^1J_{C-F} = 258$ Hz), 158.5, 158.3, 149.4 (d, $^3J_{C-F} = 14.5$ Hz), 133.0, 131.3 (d, $^3J_{C-F} = 10.7$ Hz), 129.8, 128.7, 128.4, 116.6 (d, $^2J_{C-F} = 24.0$ Hz), 113.5 (d, $^4J_{C-F} = 2.4$ Hz), 113.2 (d, $^2J_{C-F} = 22.8$ Hz). (Reported compound.³)



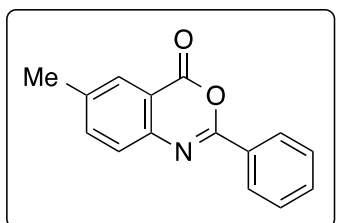
2-Phenyl-7-(trifluoromethyl)-4H-benzo[d][1,3]oxazin-4-one (1da): a colorless solid (56%); 1H NMR (CDCl₃, 400 MHz) δ 8.39–8.31 (m, 3H), 8.00–7.98 (m, 1H), 7.74 (dd, $J = 8.2$ Hz, 1.4 Hz, 1H), 7.66–7.60 (m, 1H), 7.58–7.52 (m, 2H); ^{13}C NMR (CDCl₃, 125 MHz) δ 158.4, 158.3, 147.3, 137.9 (q, $^2J_{C-F} = 33.6$ Hz), 136.5, 133.1, 129.6, 128.9, 128.5, 124.6 (q, $^3J_{C-F} = 3.6$ Hz), 124.3 (q, $^3J_{C-F} = 3.6$ Hz), 123.0 (q, $^1J_{C-F} = 273$ Hz), 119.5. (Reported compound.³)



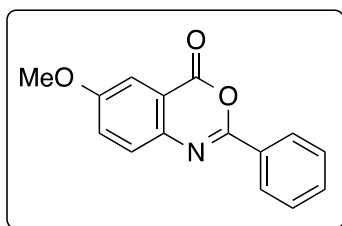
7-Acetyl-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ea): a colorless solid (56%); IR (KBr) ν 3466, 1764, 1685, 1609, 1568, 1427 cm⁻¹; 1H NMR (CDCl₃, 400 MHz) δ 8.35–8.30 (m, 3H), 8.24–8.21 (m, 1H), 8.07–8.05 (m, 1H), 7.65–7.58 (m, 1H), 7.57–7.51 (m, 2H), 2.73 (s, 3H); ^{13}C NMR (CDCl₃, 100 MHz) δ 196.7, 158.7, 157.8, 147.2, 143.2, 133.0, 129.7, 129.0, 128.8, 128.4, 127.3, 126.8, 119.9, 27.0; HRMS (ESI): m/z calculated for C₁₆H₁₂O₃N⁺ [M+H]⁺: 266.0812, found: 266.0813.



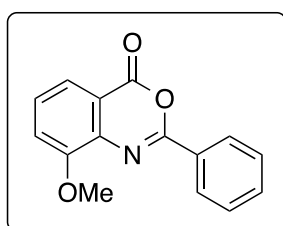
Methyl 4-oxo-2-phenyl-4H-benzo[d][1,3]oxazine-7-carboxylate (1fa): a colorless solid (66%); IR (KBr) ν 3031, 2951, 1730, 1610, 1575, 1438, 1283, 1226, 1025 cm⁻¹; 1H NMR (CDCl₃, 400 MHz) δ 8.37–8.29 (m, 4H), 8.13 (dd, $J = 8.2$ Hz, 1.4 Hz, 1H), 7.64–7.58 (m, 1H), 7.57–7.51 (m, 2H), 4.01 (s, 3H); ^{13}C NMR (CDCl₃, 125 MHz) δ 165.5, 158.8, 157.7, 147.0, 137.4, 132.9, 129.8, 128.8 (2C), 128.7, 128.4, 128.3, 120.0, 52.8; HRMS (ESI): m/z calculated for C₁₆H₁₂O₄N⁺ [M+H]⁺: 282.761, found: 282.760.



6-Methyl-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ga): a colorless solid (81%); 1H NMR (CDCl₃, 400 MHz) δ 8.33–8.28 (m, 2H), 8.05 (d, $J = 1.3$ Hz, 1H), 7.67–7.48 (m, 5H), 2.50 (s, 3H); ^{13}C NMR (CDCl₃, 125 MHz) δ 159.7, 156.3, 144.7, 138.6, 137.7, 132.3, 130.3, 128.6, 128.1 (2C) 127.0, 116.6, 21.2. (Reported compound.⁴)

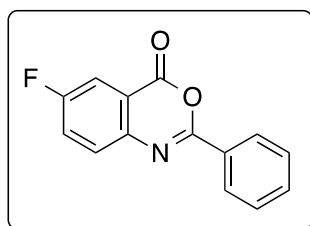


6-Methoxy-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ha): a colorless solid (59%); ^1H NMR (CDCl_3 , 400 MHz) δ 8.31–8.27 (m, 2H), 7.64 (d, J = 5.9 Hz, 1H), 7.63 (s, 1H), 7.59–7.48 (m, 3H), 7.43–7.38 (m, 1H), 3.93 (s, 3H); ^{13}C NMR (CDCl_3 , 125 MHz) δ 159.8, 159.2, 155.2, 141.1, 132.2, 130.3, 128.7, 128.7, 127.9, 125.9, 117.7, 108.6, 55.9. (Reported compound.⁴)

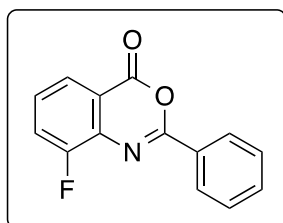


8-Methoxy-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ha'): a colorless solid (15%); ^1H NMR (CDCl_3 , 500 MHz) δ 8.36–8.32 (m, 2H), 7.83 (dd, J = 8.0 Hz, 1.1 Hz, 1H), 7.59–7.54 (m, 1H), 7.53–7.48 (m, 2H), 7.45 (dd, J = 8.0 Hz, 8.0 Hz, 1H), 7.32–7.28 (m, 1H), 4.04 (s, 3H); ^{13}C NMR (CDCl_3 , 125 MHz) δ 159.4, 156.5, 154.3, 137.0, 132.5, 130.3, 128.7, 128.6, 128.4, 119.8, 118.0, 117.3, 56.6. (Reported compound.⁴)

6-Fluoro-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ia) and 8-Fluoro-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ia'): a colorless solid (79%, combined yield); regioisomeric ratio (**1ia**/**1ia'**) = 1/2.3 (determined by ^1H NMR analysis); Each isomer was characterized after separation by preparative TLC.

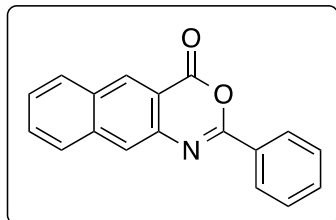


6-Fluoro-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ia): a colorless solid; ^1H NMR (CDCl_3 , 500 MHz) δ 8.32–8.28 (m, 2H), 7.89 (dd, J = 8.0, 2.9 Hz, 1H), 7.72 (dd, J = 9.2, 4.6 Hz, 1H), 7.62–7.49 (m, 4H); ^{13}C NMR (CDCl_3 , 125 MHz) δ 161.9 (d, $^1J_{\text{C-F}}$ = 251 Hz), 158.8 (d, $^4J_{\text{C-F}}$ = 2.4 Hz), 156.5 (d, $^4J_{\text{C-F}}$ = 2.4 Hz), 143.6 (d, $^4J_{\text{C-F}}$ = 2.4 Hz), 132.7, 129.9, 129.6 (d, $^3J_{\text{C-F}}$ = 7.2 Hz), 128.8, 128.2, 124.7 (d, $^2J_{\text{C-F}}$ = 24.0 Hz), 118.3 (d, $^3J_{\text{C-F}}$ = 9.5 Hz), 113.9 (d, $^2J_{\text{C-F}}$ = 24.0 Hz). (Reported compound.⁴)

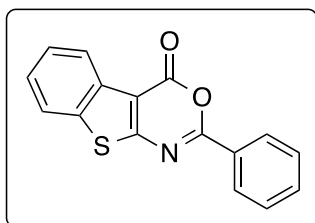


8-Fluoro-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ia'): a colorless solid; IR (KBr) ν 3072, 2920, 2361, 1759, 1613, 1481, 1456, 1306, 1055 cm^{-1} ; ^1H NMR (CDCl_3 , 500 MHz) δ 8.37–8.33 (m, 2H), 8.05 (d, J = 8.0 Hz, 1H), 7.63–7.45 (m, 5H); ^{13}C NMR (CDCl_3 , 125 MHz) δ 158.4, 158.3, 156.7 (d, $^1J_{\text{C-F}}$ = 260 Hz), 136.2 (d, $^2J_{\text{C-F}}$ = 11.9 Hz), 133.0, 129.8, 128.8, 128.6, 128.4 (d, $^3J_{\text{C-F}}$ = 8.4 Hz), 124.1 (d, $^3J_{\text{C-F}}$ = 4.8 Hz), 122.6 (d, $^2J_{\text{C-F}}$ = 18.0 Hz),

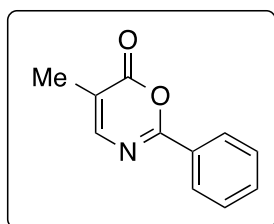
118.7 (d, $^4J_{\text{C-F}} = 1.3$ Hz); HRMS (ESI): m/z calculated for $\text{C}_{14}\text{H}_9\text{O}_2\text{NF}^+$ $[\text{M}+\text{H}]^+$: 242.0612, found: 242.0612.



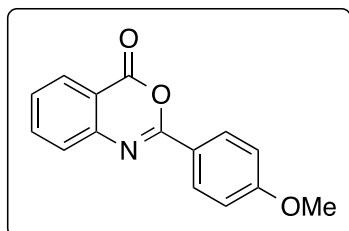
2-Phenyl-4H-naphtho[2,3-*d*][1,3]oxazin-4-one (1ja): a colorless solid (75%); ^1H NMR (CDCl_3 , 400 MHz) δ 8.89 (s, 1H), 8.39–4.34 (m 2H), 8.17 (s, 1H), 8.06 (d, $J = 8.4$ Hz, 1H), 8.00 (d, $J = 8.4$ Hz, 1H), 7.72–7.65 (m, 1H), 7.63–7.51 (m, 4H); ^{13}C NMR (CDCl_3 , 125 MHz) δ 159.9, 155.3, 141.3, 137.6, 132.4, 132.1, 131.1, 130.4, 129.6, 129.6, 128.7, 128.2, 128.2, 127.1, 125.2, 115.6. (Reported compound.⁵)



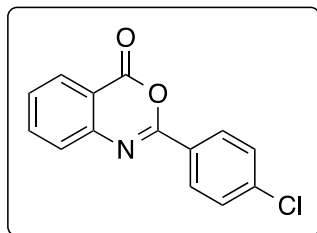
2-Phenyl-4H-benzo[4,5]thieno[2,3-*d*][1,3]oxazin-4-one (1ka): a pale yellow solid (68%); IR (KBr) ν 1758, 1589, 1560, 1502, 1449, 1433, 1266 cm^{-1} ; ^1H NMR (CDCl_3 , 400 MHz) δ 8.50–8.46 (m, 1H), 8.39–8.34 (m, 2H), 7.89 (dd, $J = 8.8$ Hz, 1.1 Hz, 1H), 7.65–7.48 (m, 5H); ^{13}C NMR (CDCl_3 , 100 MHz) δ 166.5, 161.3, 154.5, 135.8, 133.3, 133.2, 129.5, 128.9, 128.7, 126.7, 126.5, 124.5, 122.5, 111.8; HRMS (ESI): m/z calculated for $\text{C}_{16}\text{H}_9\text{O}_2\text{NNaS}^+$ $[\text{M}+\text{Na}]^+$: 302.0246, found: 302.0247.



5-Methyl-2-phenyl-6H-1,3-oxazin-6-one (1la): a colorless solid (31%); IR (KBr) ν 2983, 1737, 1621, 1579, 1549, 1389, 1331, 1216 cm^{-1} ; ^1H NMR (CDCl_3 , 400 MHz) δ 8.21–8.17 (m, 2H), 7.67–7.64 (m, 1H), 7.60–7.54 (m, 1H), 7.52–7.46 (m, 2H), 2.11 (d, $J = 1.4$ Hz, 3H); ^{13}C NMR (CDCl_3 , 100 MHz) δ 162.3, 160.3, 150.4, 132.9, 129.8, 128.8, 128.1, 119.5, 13.4; HRMS (ESI): m/z calculated for $\text{C}_{11}\text{H}_{10}\text{O}_2\text{N}^+$ $[\text{M}+\text{H}]^+$: 188.0706, found: 188.0708.

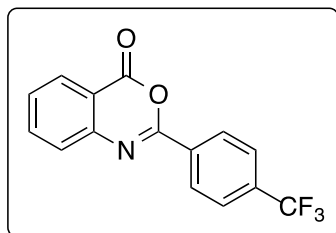


2-(4-Methoxyphenyl)-4H-benzo[*d*][1,3]oxazin-4-one (1ab): a colorless solid (82%); ^1H NMR (CDCl_3 , 400 MHz) δ 8.27 (ddd, $J = 9.1$ Hz, 2.7 Hz, 2.7 Hz, 2H), 8.22 (dd, $J = 7.7$ Hz, 1.4 Hz, 1H), 7.84–7.78 (m, 1H), 7.65 (d, $J = 7.7$ Hz, 1H), 7.51–7.45 (m, 1H), 7.01 (ddd, $J = 9.1$ Hz, 2.7 Hz, 2.7 Hz, 2H), 3.90 (s, 3H); ^{13}C NMR (CDCl_3 , 125 MHz) δ 163.2, 159.7, 157.0, 147.2, 136.4, 130.2, 128.4, 127.6, 126.8, 122.4, 116.6, 114.0, 55.4. (Reported compound.³)



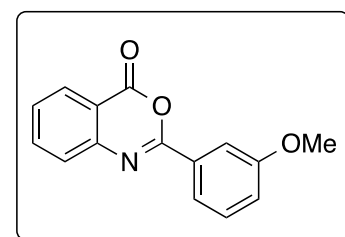
116.9. (Reported compound.³)

2-(4-Chlorophenyl)-4H-benzo[d][1,3]oxazin-4-one (1ac): a colorless solid (68%); ¹H NMR (CDCl₃, 400 MHz) δ 8.29–8.22 (m, 3H), 7.88–7.82 (m, 1H), 7.69 (d, *J* = 8.2 Hz, 2H), 7.57–7.47 (m, 3H); ¹³C NMR (CDCl₃, 125 MHz) δ 159.2, 156.1, 146.7, 139.0, 136.6, 129.5, 129.0, 128.6, 128.6, 128.4, 127.2,



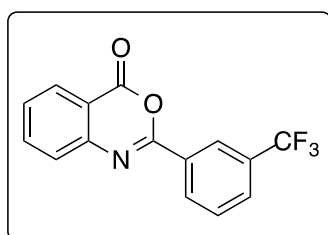
116.9. (Reported compound.³)

2-(4-(Trifluoromethyl)phenyl)-4H-benzo[d][1,3]oxazin-4-one (1ad): a colorless solid (49%); ¹H NMR (CDCl₃, 400 MHz) δ 8.45 (d, *J* = 8.4 Hz, 2H), 8.27 (dd, *J* = 8.2 Hz, 1.4 Hz, 1H), 7.91–7.84 (m, 1H), 7.78 (d, *J* = 8.4 Hz, 2H), 7.74 (d, *J* = 8.2 Hz, 1H), 7.61–7.55 (m, 1H); ¹³C NMR (CDCl₃, 125



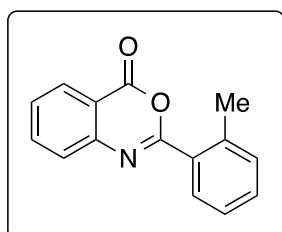
116.9. (Reported compound.⁶)

2-(3-Methoxyphenyl)-4H-benzo[d][1,3]oxazin-4-one (1ae): a colorless solid (74%); ¹H NMR (CDCl₃, 400 MHz) δ 8.25 (dd, *J* = 8.1, 1.3 Hz, 1H), 7.95–7.90 (m, 1H), 7.87–7.81 (m, 2H), 7.71 (dd, *J* = 8.1 Hz, 0.9 Hz, 1H), 7.56–7.50 (m, 1H), 7.43 (dd, *J* = 8.1 Hz, 8.1 Hz, 1H), 7.13 (ddd, *J* = 8.1 Hz,



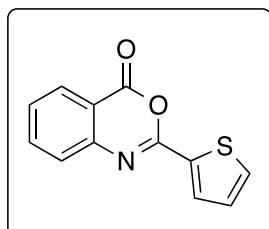
116.9. (Reported compound.⁷)

2-(3-(Trifluoromethyl)phenyl)-4H-benzo[d][1,3]oxazin-4-one (1af): a colorless solid (75%); ¹H NMR (CDCl₃, 400 MHz) δ 8.60 (s, 1H), 8.50 (d, *J* = 7.7 Hz, 1H), 8.27 (dd, *J* = 7.7 Hz, 1.4 Hz, 1H), 7.91–7.82 (m, 2H), 7.74 (d, *J* = 7.7 Hz, 1H), 7.67 (dd, *J* = 7.7 Hz, 7.7 Hz, 1H), 7.60–7.55 (m, 1H); ¹³C

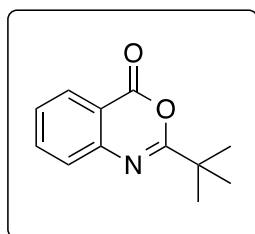


116.9. (Reported compound.⁷)

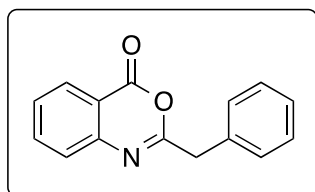
7.88–7.81 (m, 1H), 7.70 (d, $J = 8.1$ Hz, 1H), 7.58–7.52 (m, 1H), 7.47–7.41 (m, 1H), 7.37–7.31 (m, 2H), 2.74 (s, 3H); ^{13}C NMR (CDCl_3 , 125 MHz) δ 159.7, 158.2, 146.8, 139.1, 136.4, 131.9, 131.5, 130.1, 129.7, 128.4, 128.3, 127.2, 126.0, 116.7, 22.1. (Reported compound.³)



2-(Thiophen-2-yl)-4H-benzo[*d*][1,3]oxazin-4-one (1ah): a colorless solid (66%); ^1H NMR (CDCl_3 , 400 MHz) δ 8.24–8.20 (m, 1H), 7.98 (dd, $J = 3.8$ Hz, 1.1 Hz, 1H), 7.84–7.78 (m, 1H), 7.67–7.60 (m, 2H), 7.52–7.47 (m, 1H), 7.18 (dd, $J = 5.0$ Hz, 3.8 Hz, 1H); ^{13}C NMR (CDCl_3 , 125 MHz) δ 159.0, 153.6, 147.0, 136.6, 134.1, 132.4, 131.7, 128.7, 128.3, 127.9, 126.8, 116.6. (Reported compound.³)



2-(*tert*-Butyl)-4H-benzo[*d*][1,3]oxazin-4-one (1ai): a colorless solid (52%); ^1H NMR (CDCl_3 , 400 MHz) δ 8.19 (dd, $J = 7.7$ Hz, 1.4 Hz, 1H), 7.82–7.75 (m, 1H), 7.60 (d, $J = 7.7$ Hz, 1H), 7.52–7.46 (m, 1H), 1.41 (s, 9H); ^{13}C NMR (CDCl_3 , 125 MHz) δ 168.2, 160.1, 146.5, 136.3, 128.2, 128.0, 126.9, 116.7, 37.9, 27.7. (Reported compound.⁸)

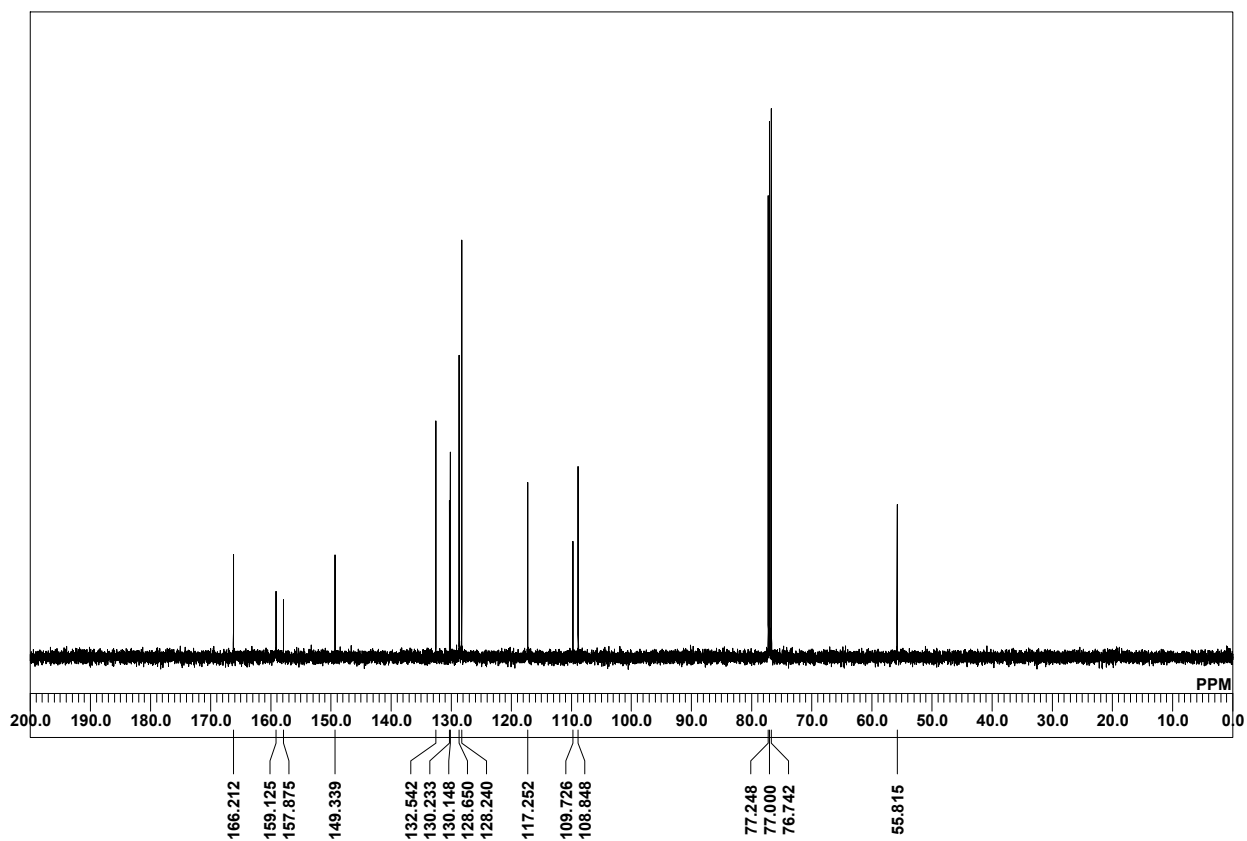
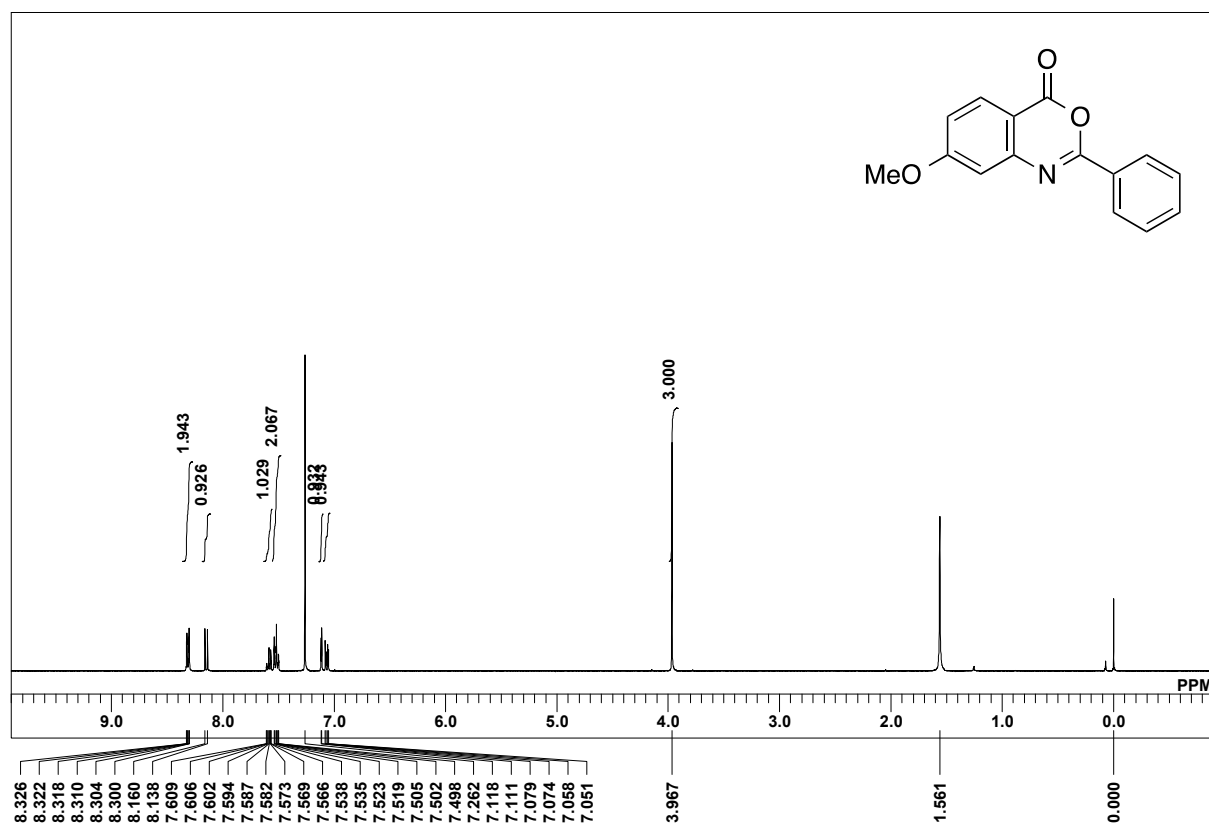


2-Benzyl-4H-benzo[*d*][1,3]oxazin-4-one (1aj): a colorless solid (72%) was obtained after purification by low-temperature silica gel column chromatography (toluene/hexane/EtOAc/Et₃N = 60/10/1/0.01). An analytically pure sample was obtained by washing with hexane. IR (KBr) ν 3064, 3031, 2361, 1761, 1642, 1603, 1471, 1402, 1267, 1132, 1019 cm^{-1} ; ^1H NMR (C_6D_6 , 400 MHz) δ 7.97 (dd, $J = 8.1$ Hz, 1.6 Hz, 1H), 7.29 (d, $J = 8.1$ Hz, 1H), 7.23–7.18 (m, 2H), 7.11–7.05 (m, 2H), 7.05–6.99 (m, 2H), 6.80–6.75 (m, 1H), 3.51 (s, 2H); ^{13}C NMR (C_6D_6 , 125 MHz) δ 161.5, 158.9, 146.8, 135.8, 134.8, 129.6, 128.9, 128.4, 127.5, 126.7, 117.4, 41.4 (one of the ^{13}C peak is overlapped by the solvent peaks); HRMS (ESI): m/z calculated for $\text{C}_{15}\text{H}_{11}\text{O}_2\text{NNa}^+$ [$\text{M}+\text{Na}$] $^+$: 260.0682, found: 260.0686.

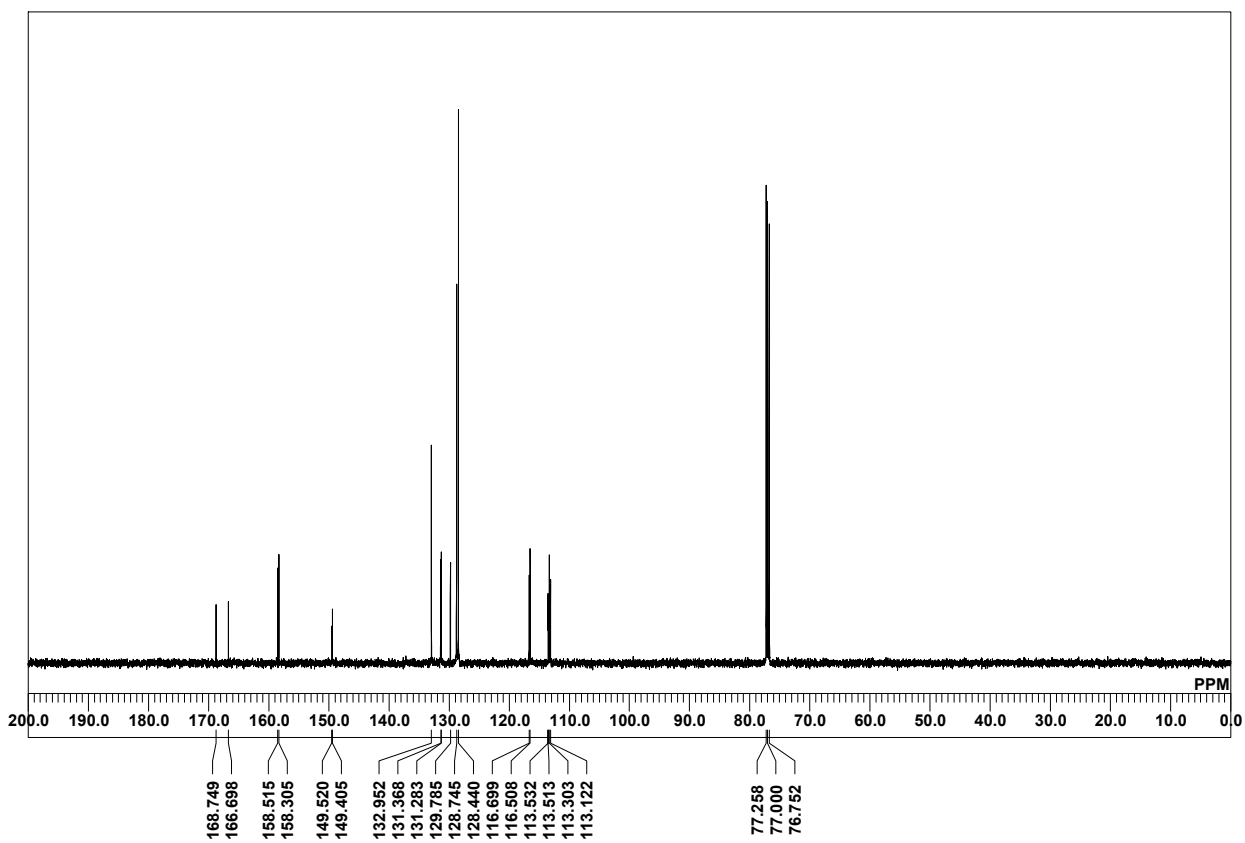
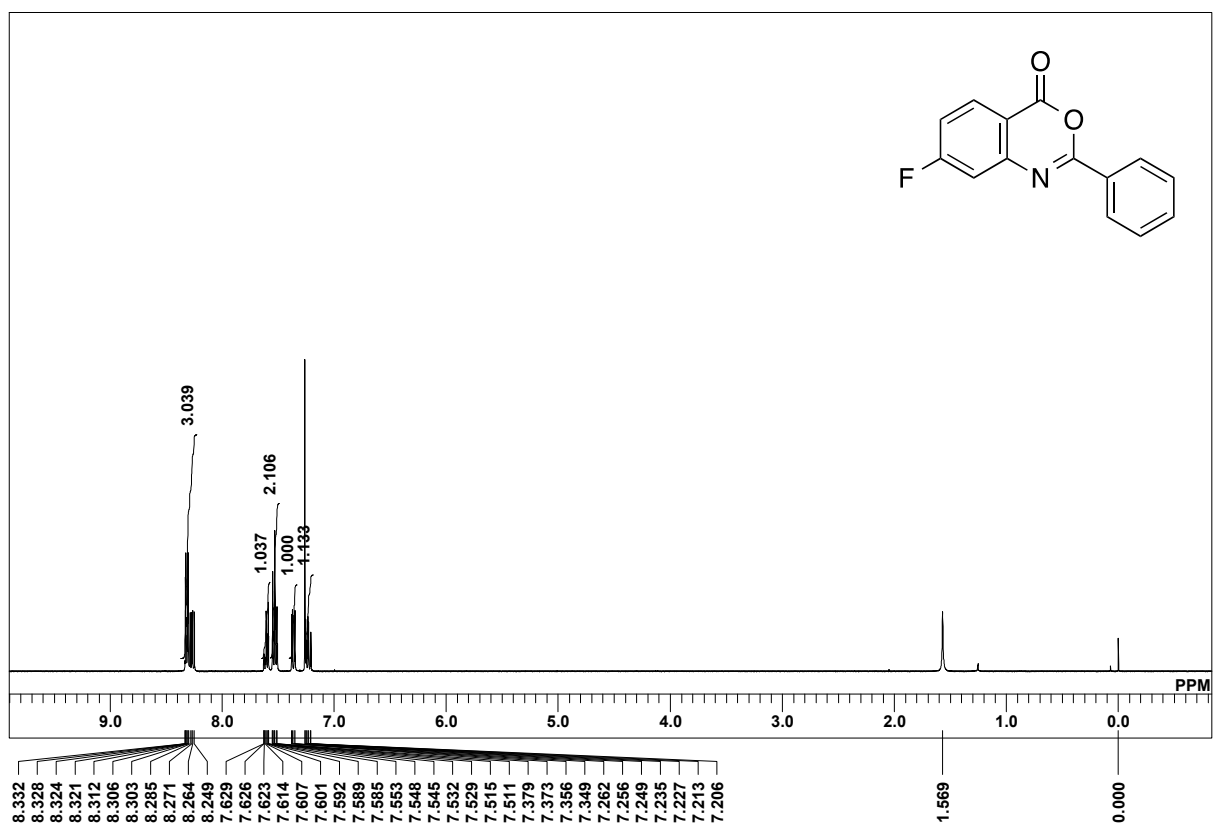
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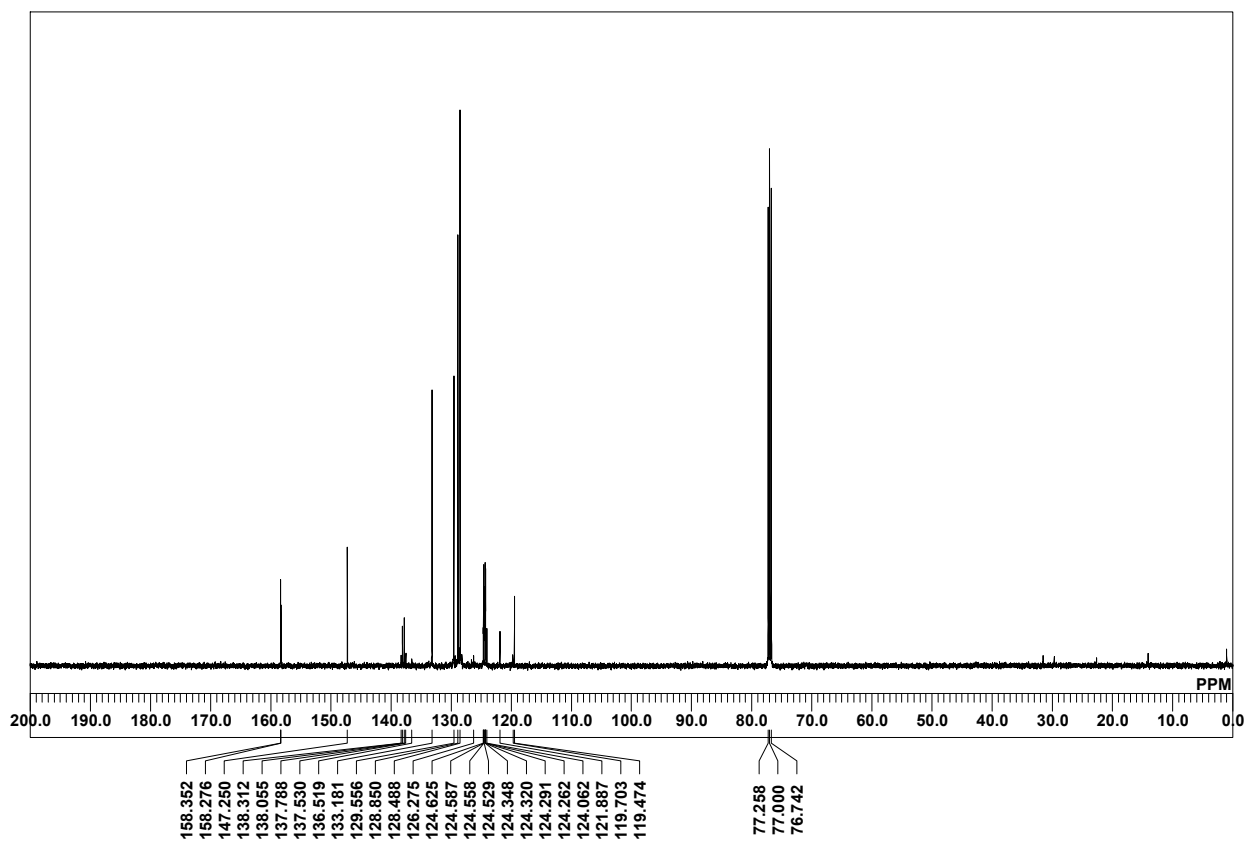
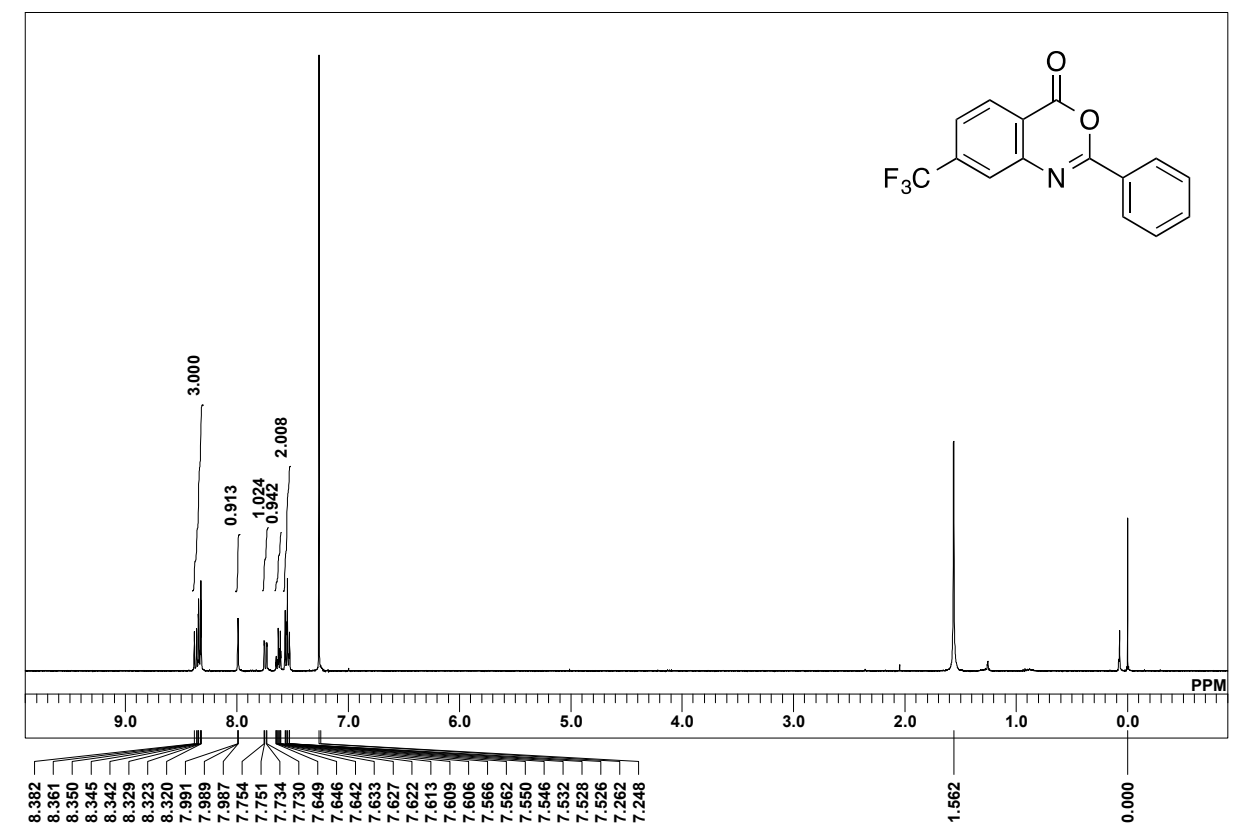
7-Methoxy-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ba)



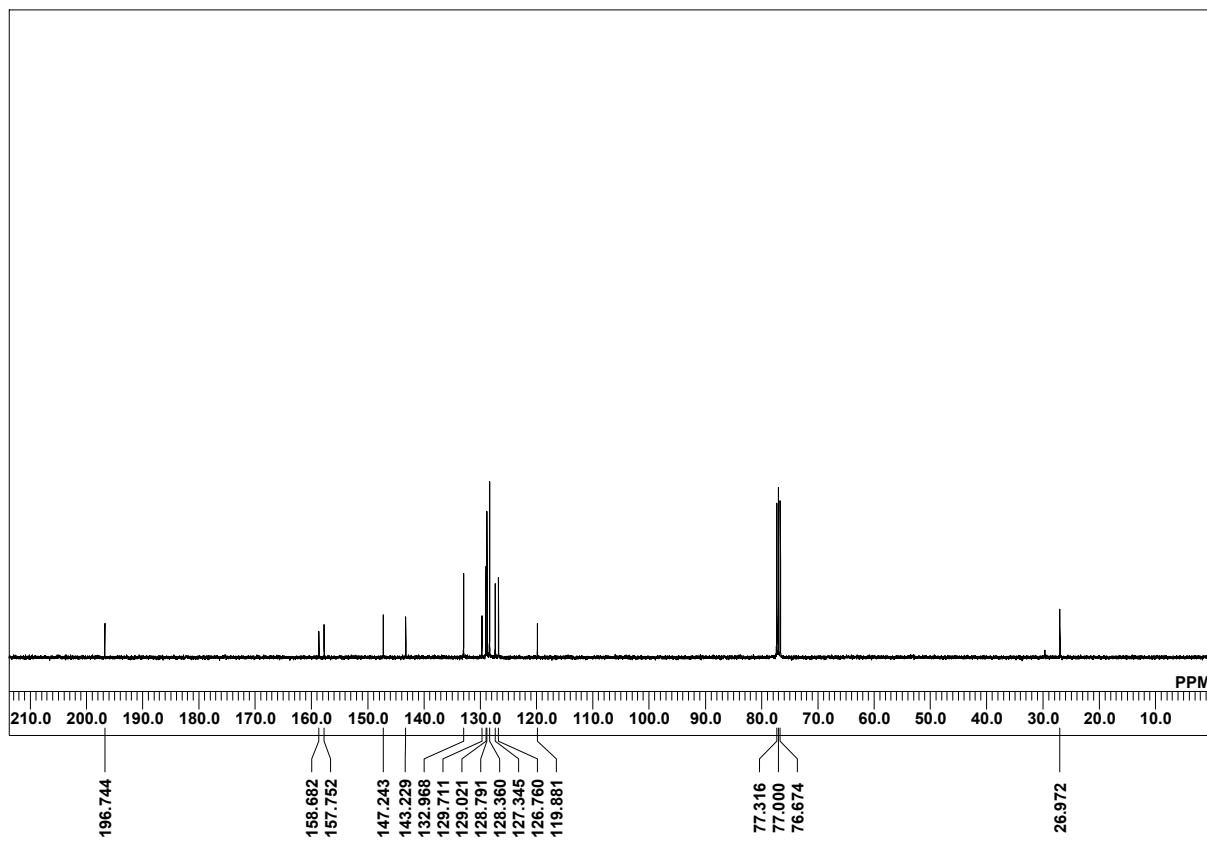
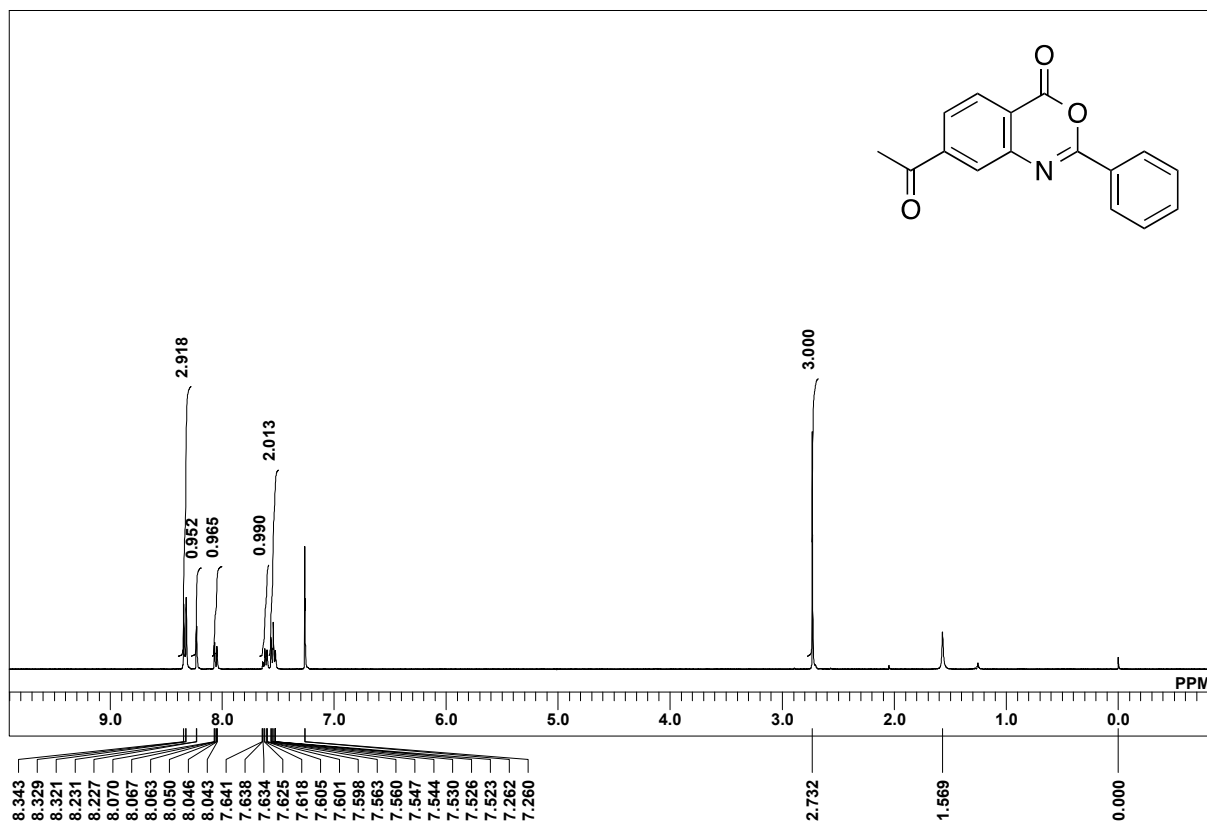
7-Fluoro-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ca)



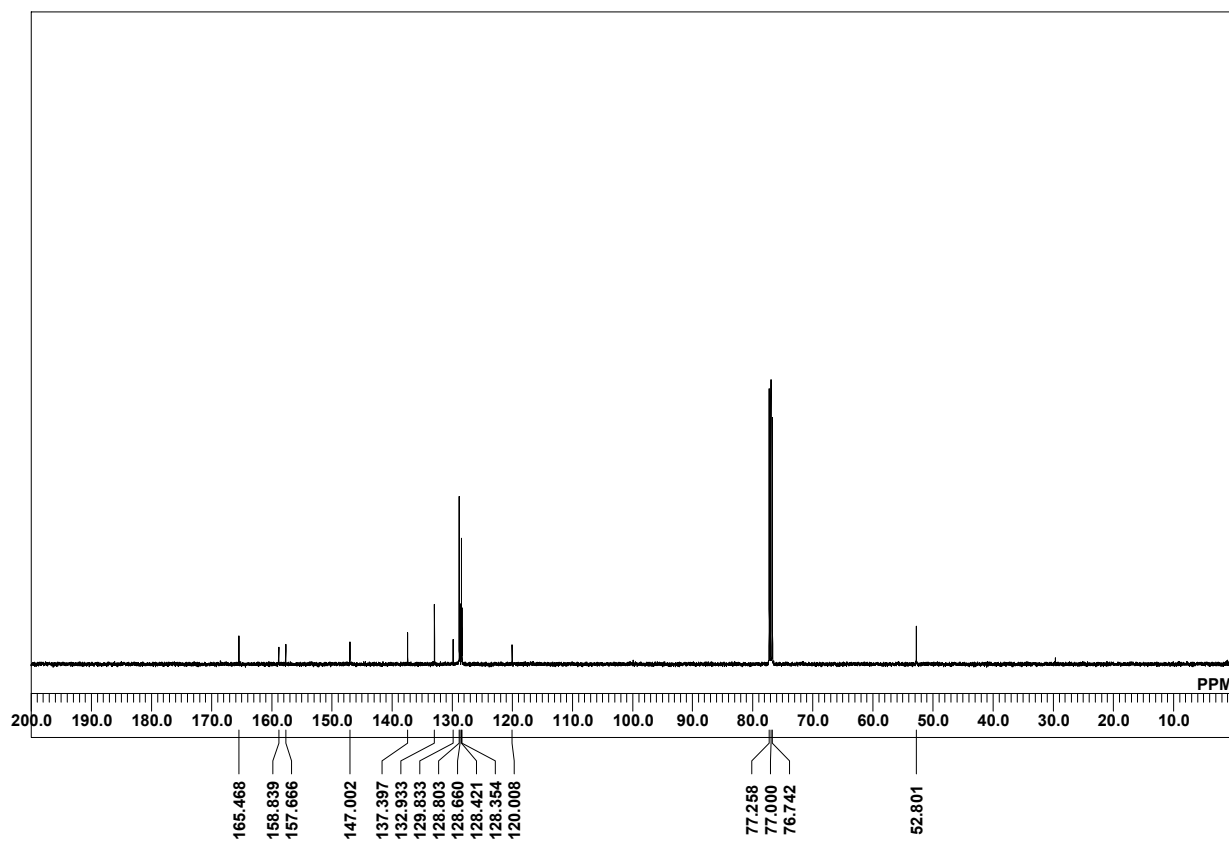
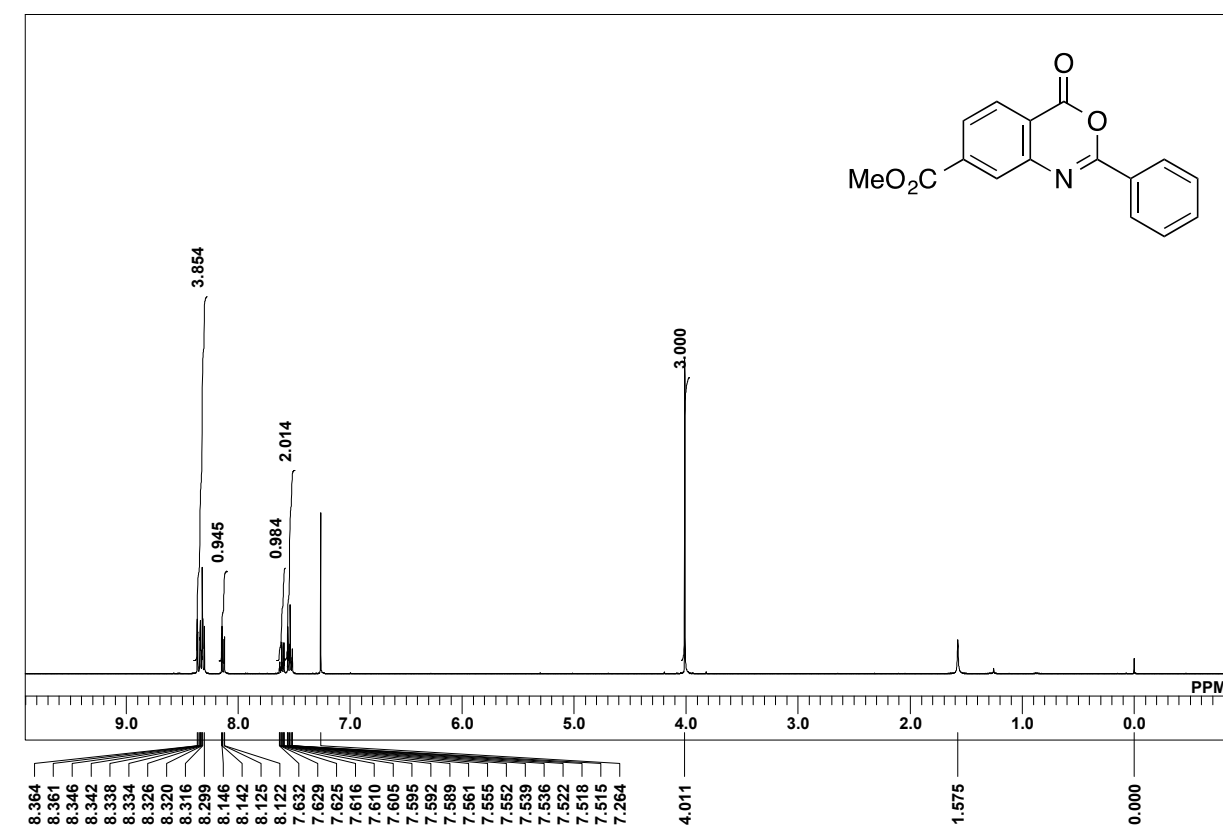
2-Phenyl-7-(trifluoromethyl)-4H-benzo[d][1,3]oxazin-4-one (1da)



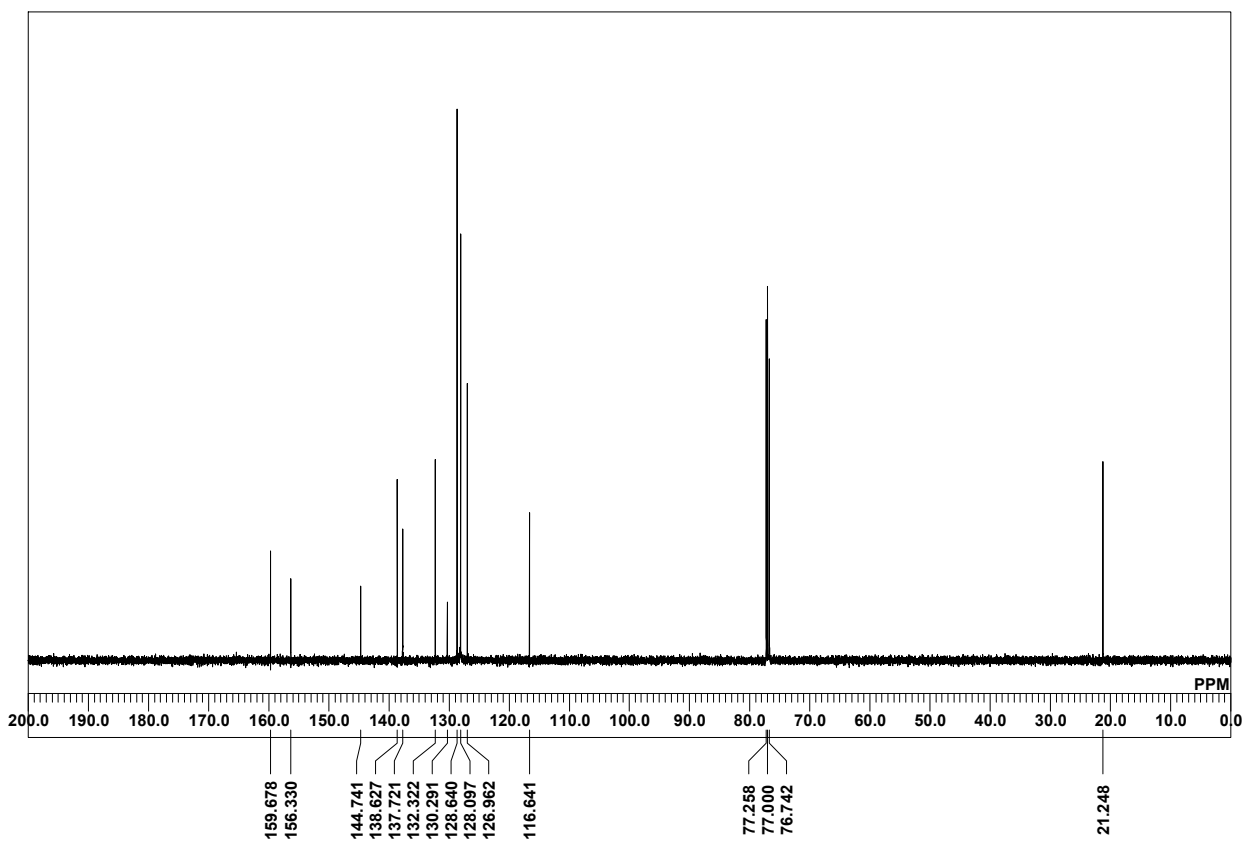
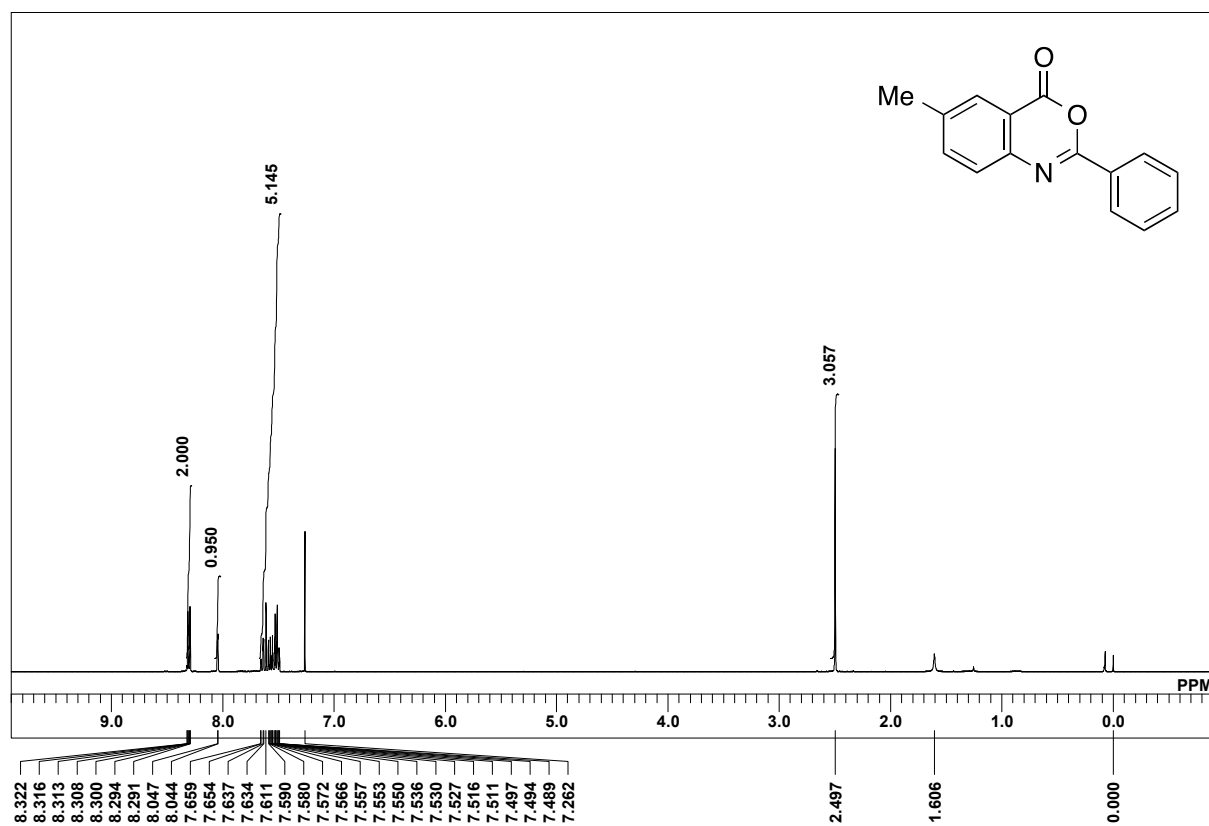
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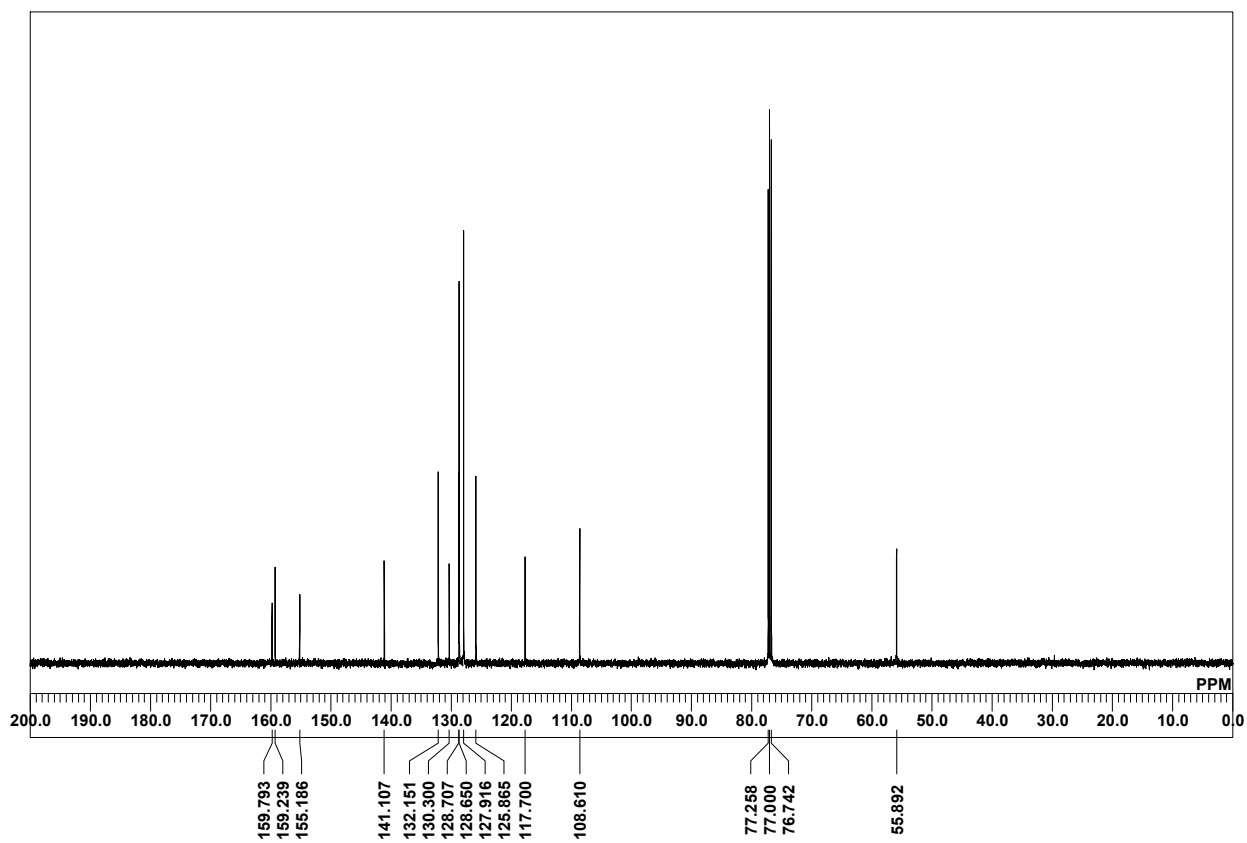
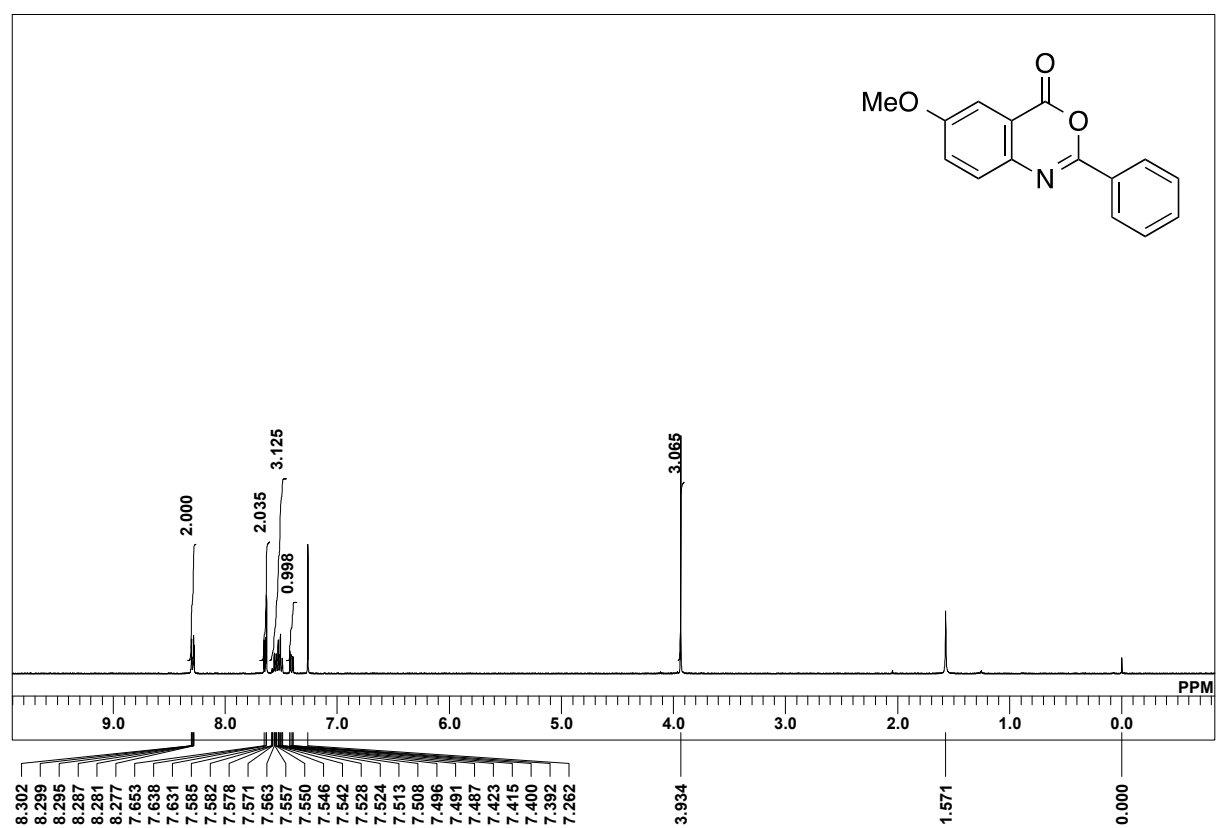
Methyl 4-oxo-2-phenyl-4H-benzo[d][1,3]oxazine-7-carboxylate (1fa)



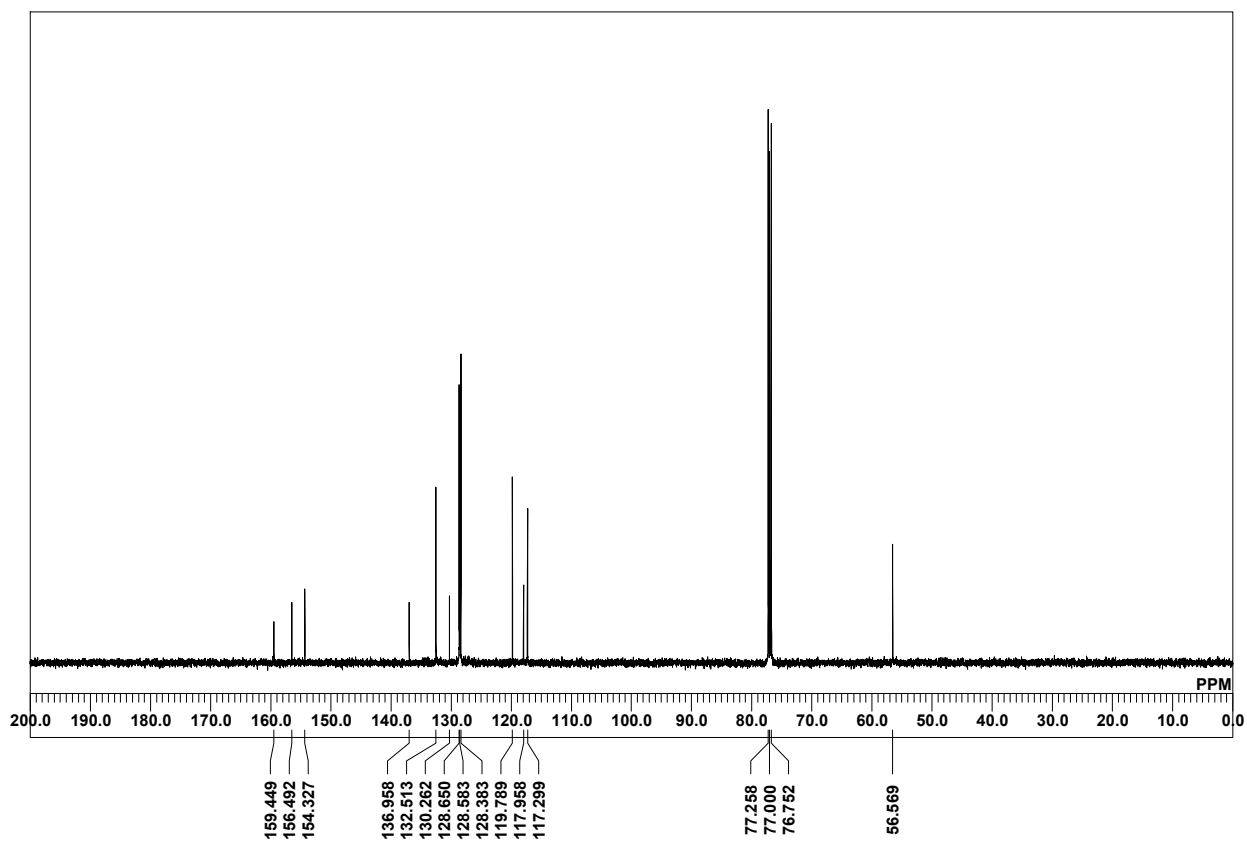
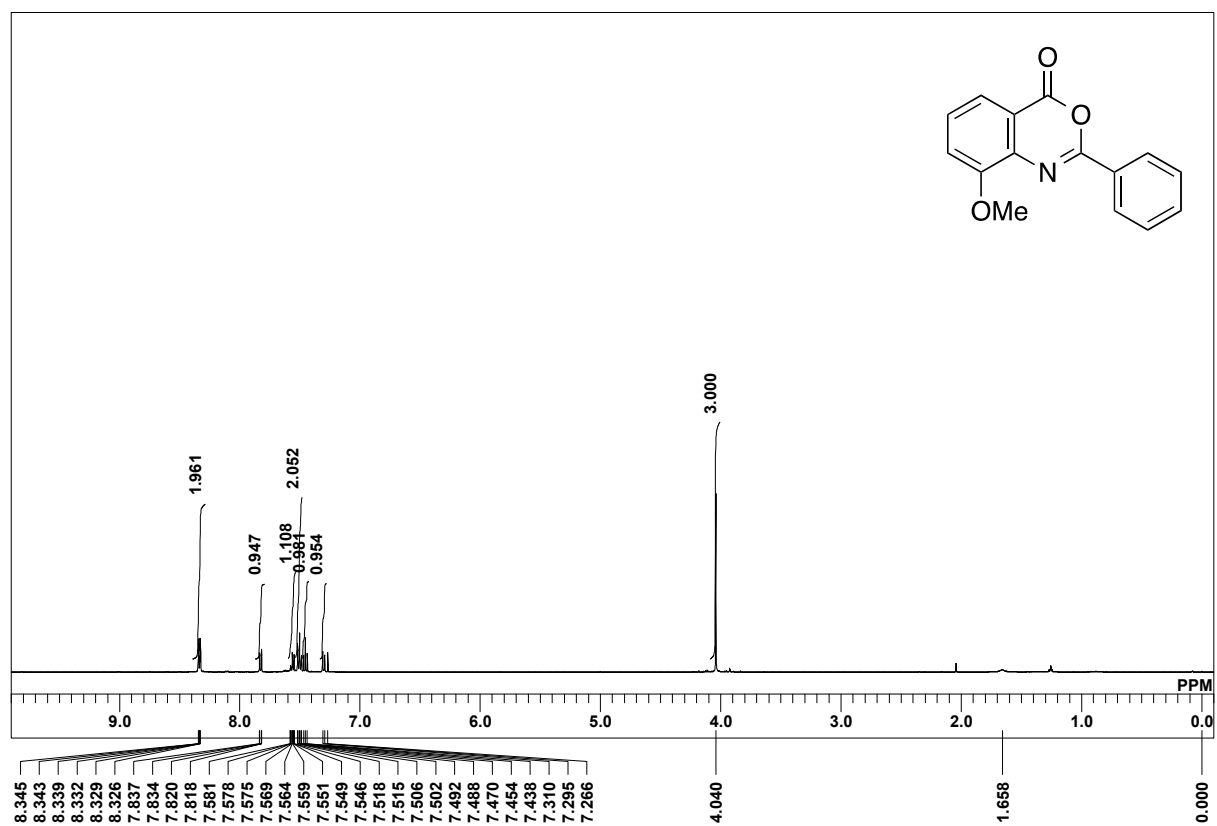
6-Methyl-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ga)



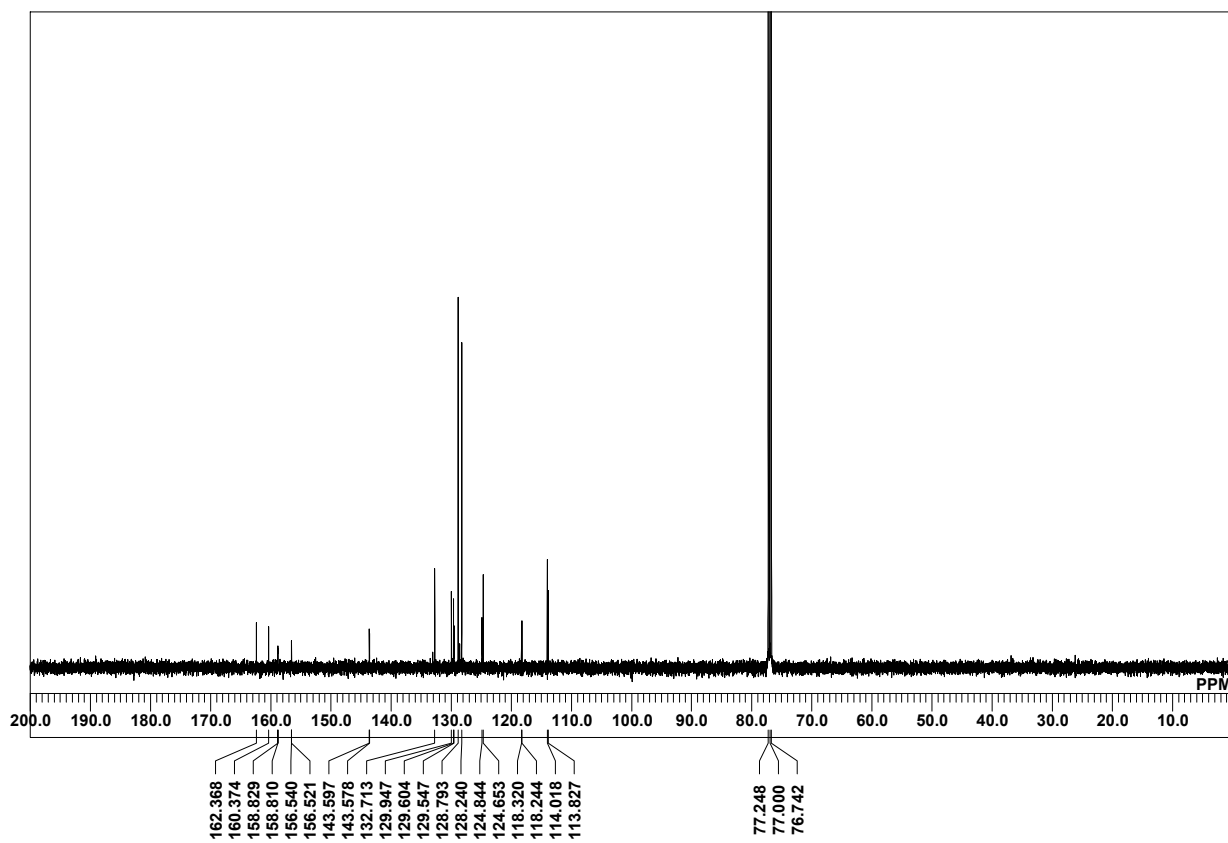
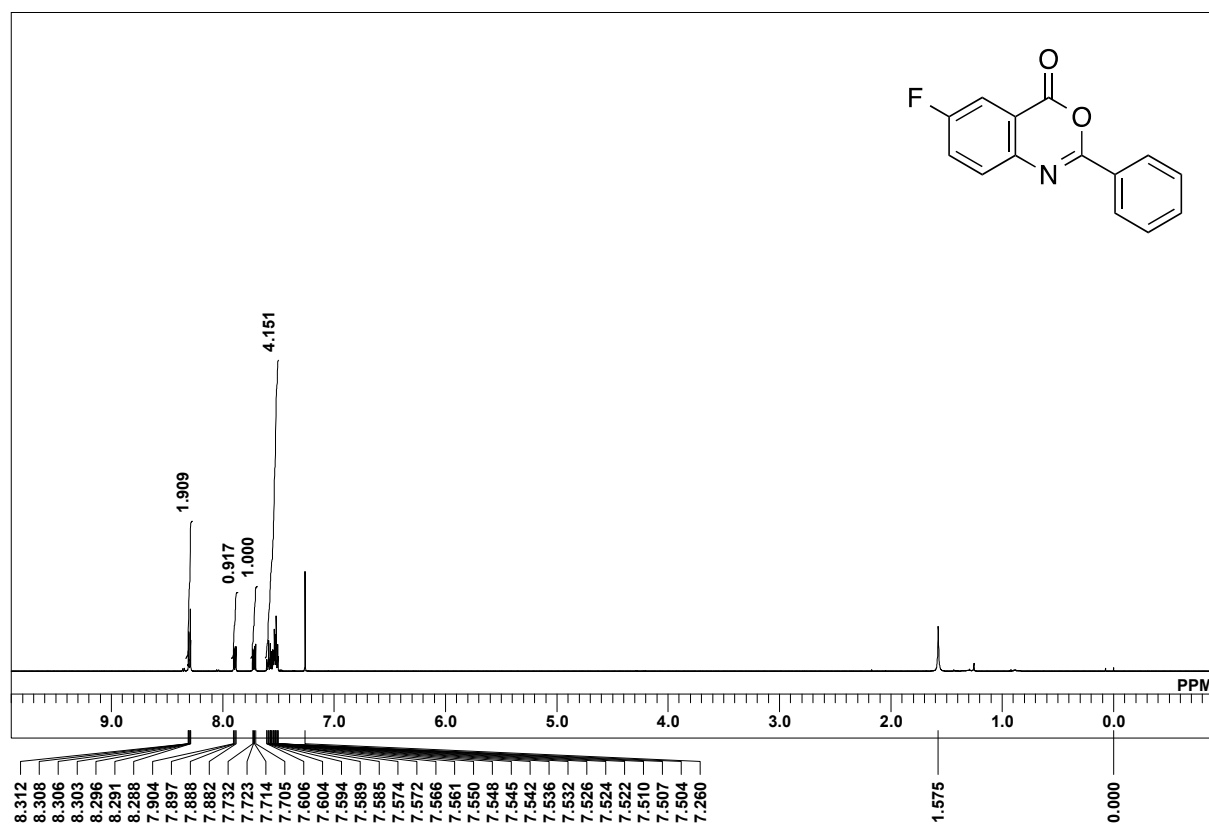
6-Methoxy-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ha)



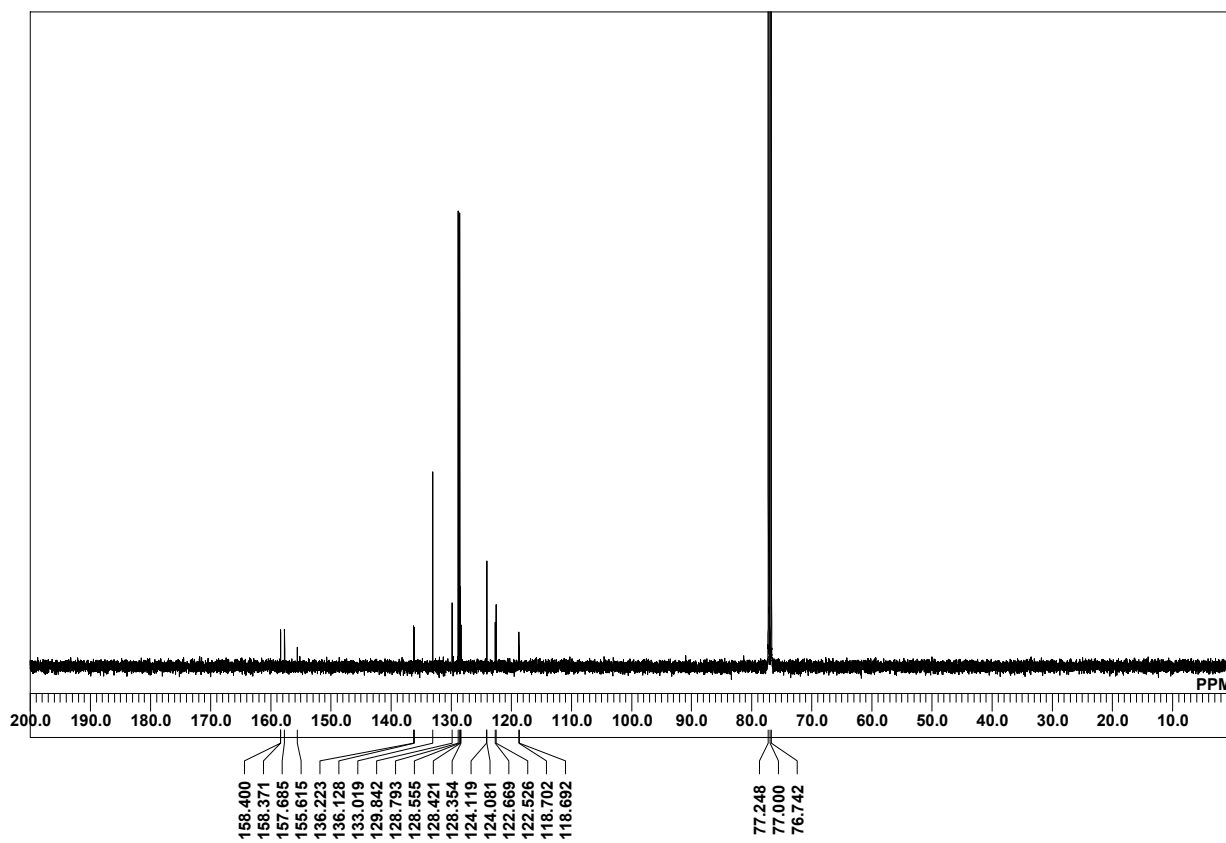
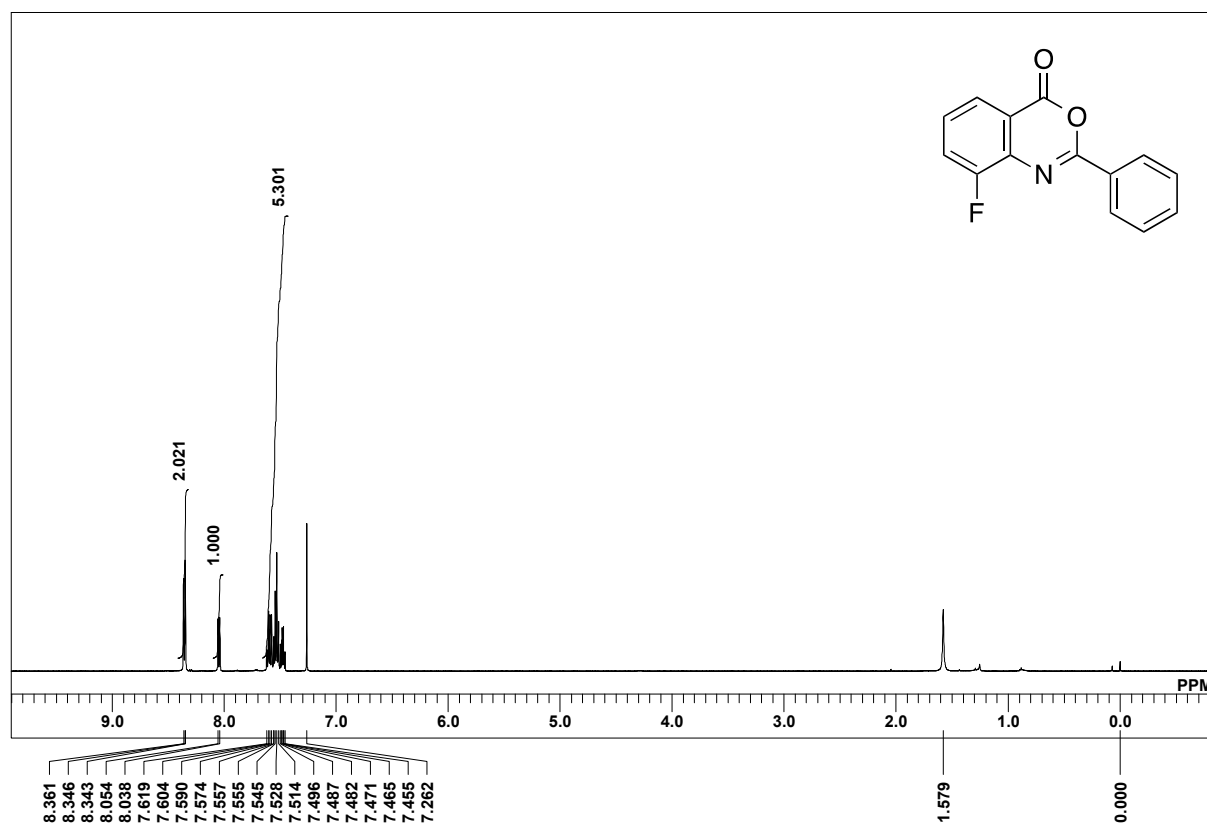
8-Methoxy-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ha')



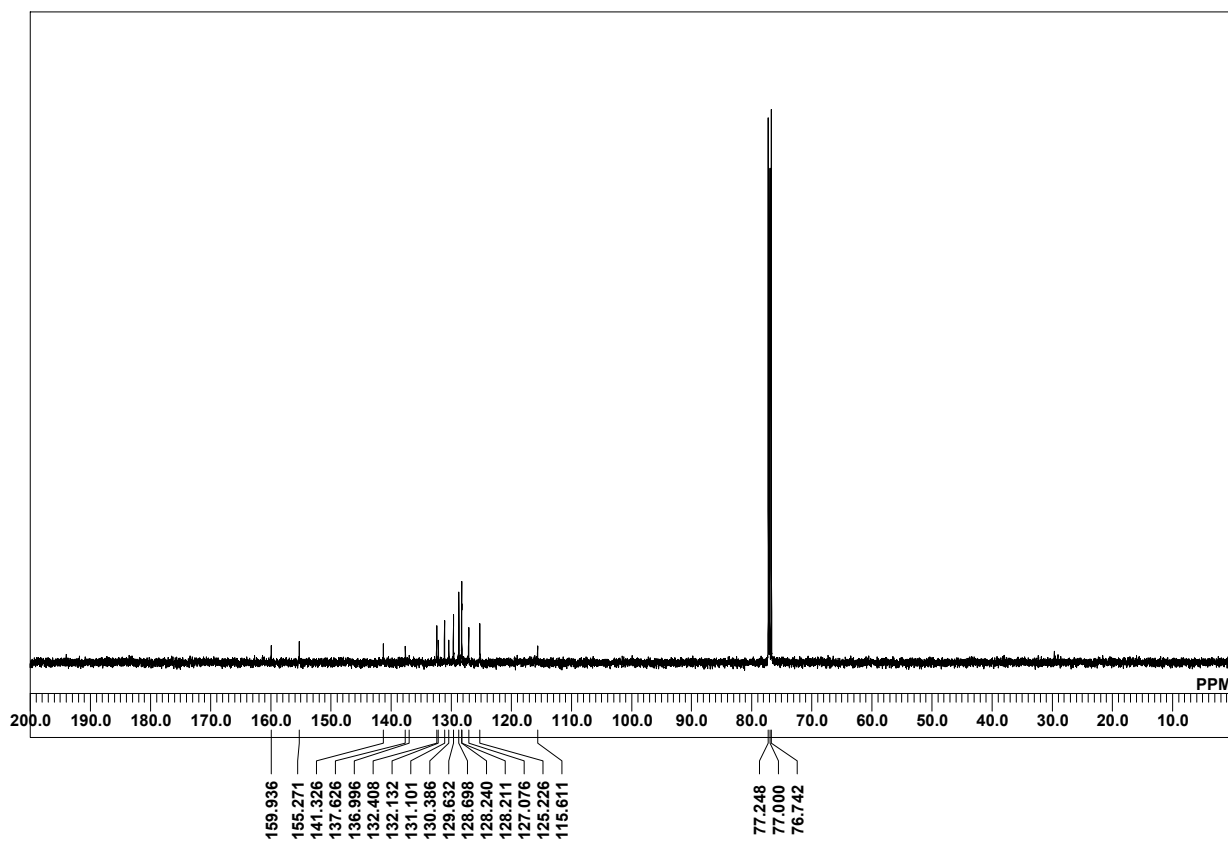
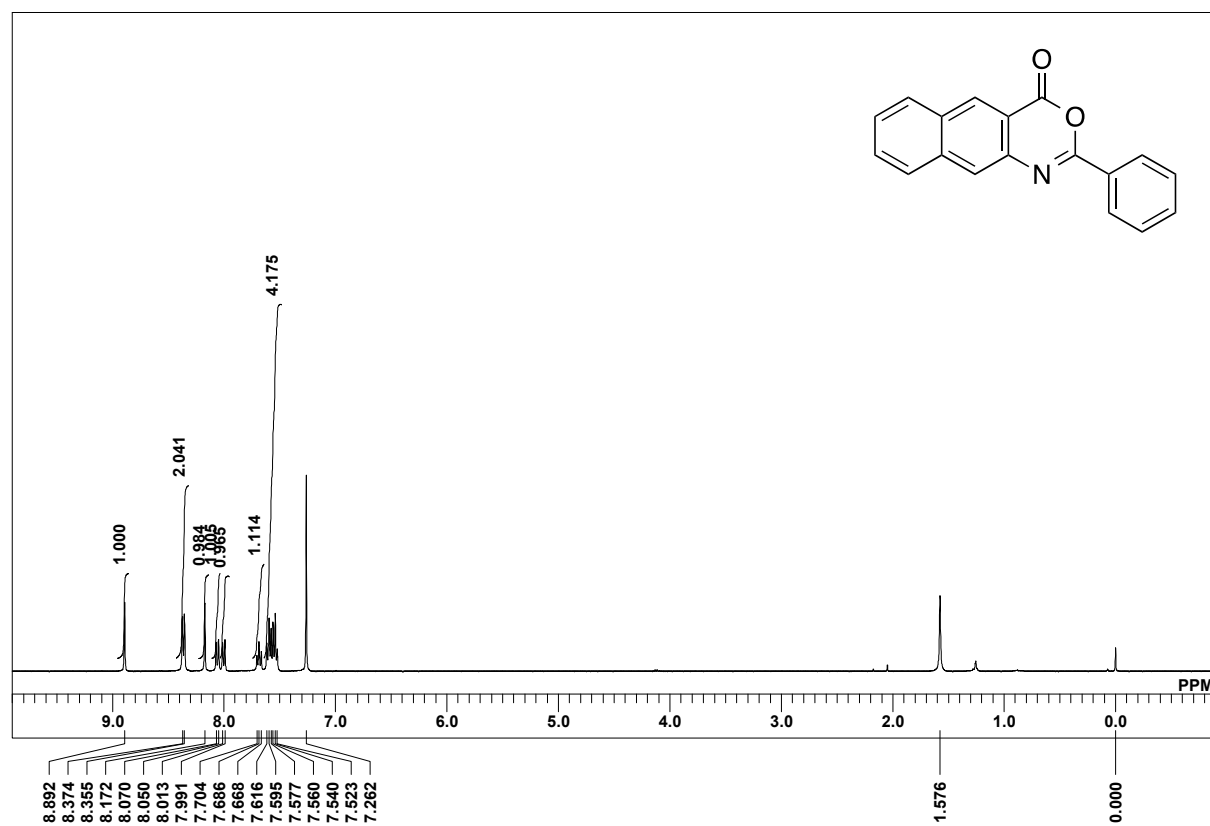
6-Fluoro-2-phenyl-4H-benzo[d][1,3]oxazin-4-one (1ia)



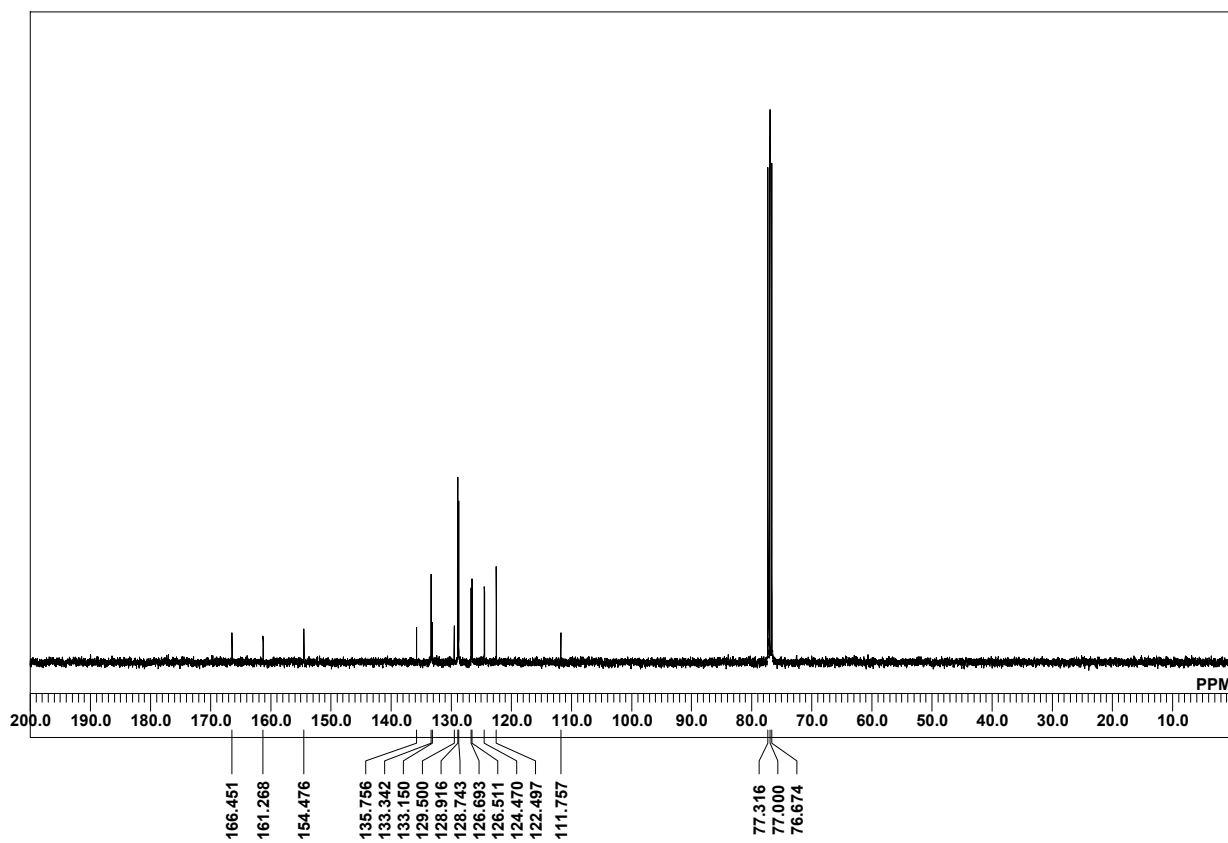
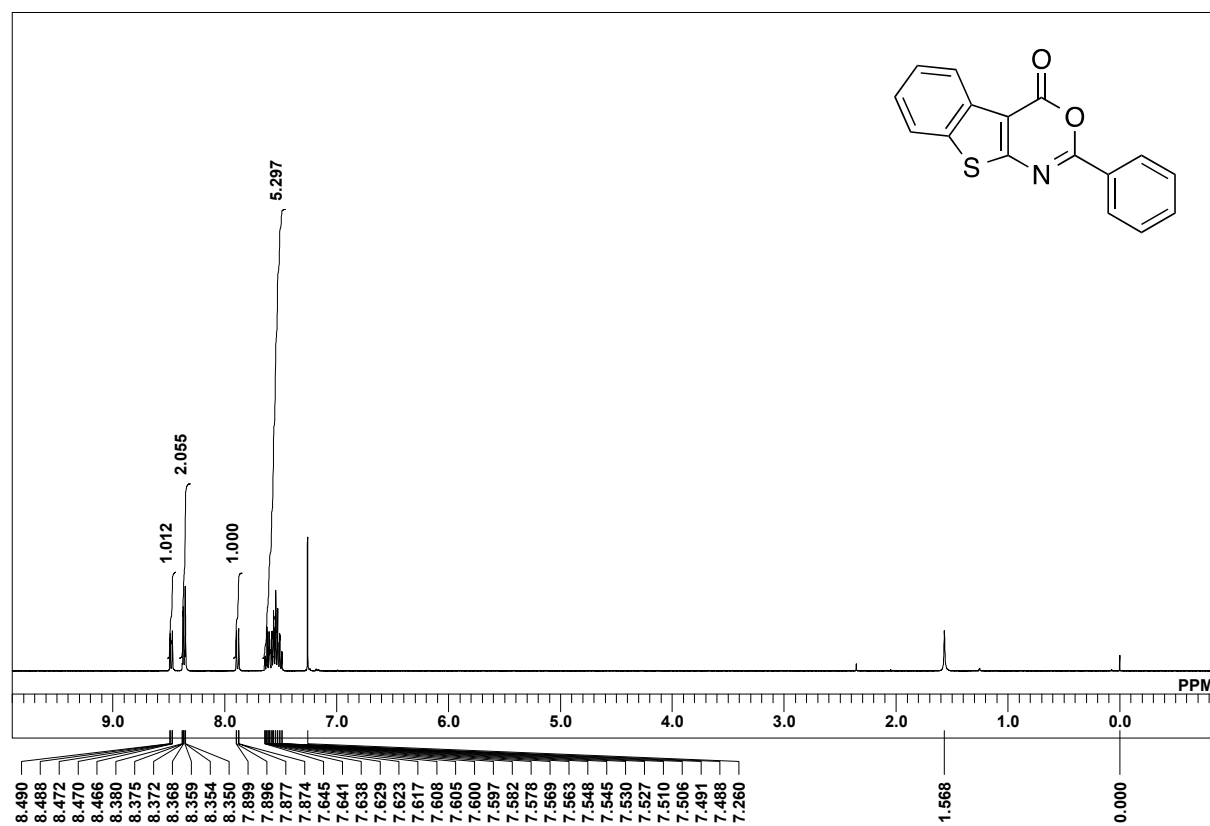
8-Fluoro-2-phenyl-4*H*-benzo[*d*][1,3]oxazin-4-one (1ia')



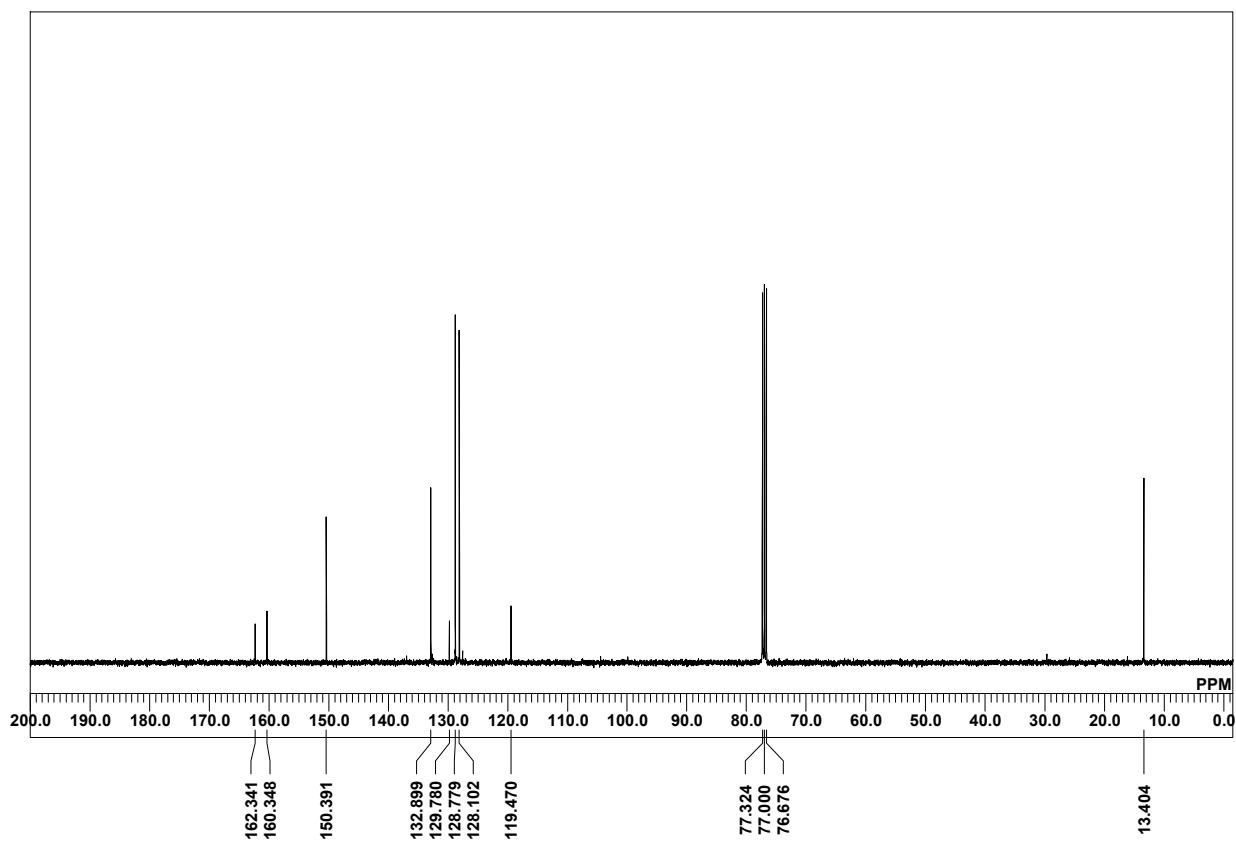
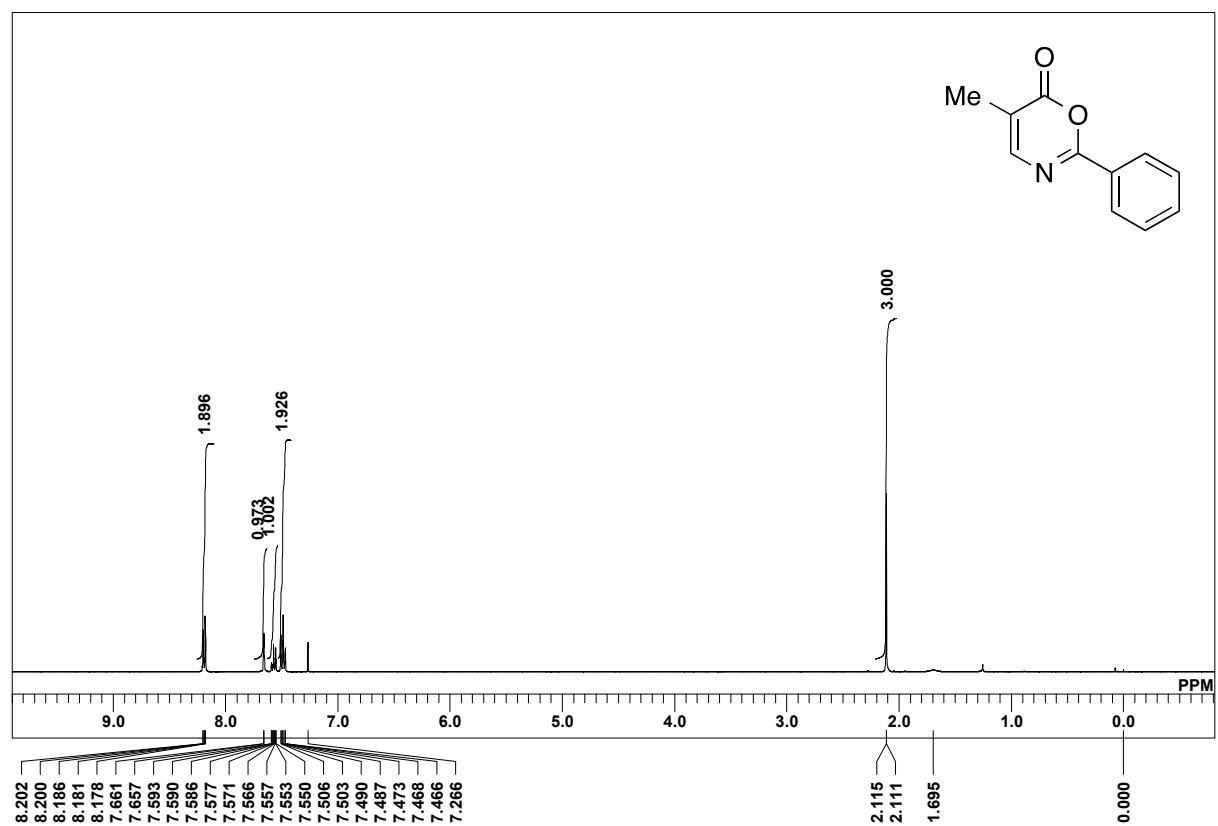
2-Phenyl-4*H*-naphtho[2,3-*d*][1,3]oxazin-4-one (1ja)



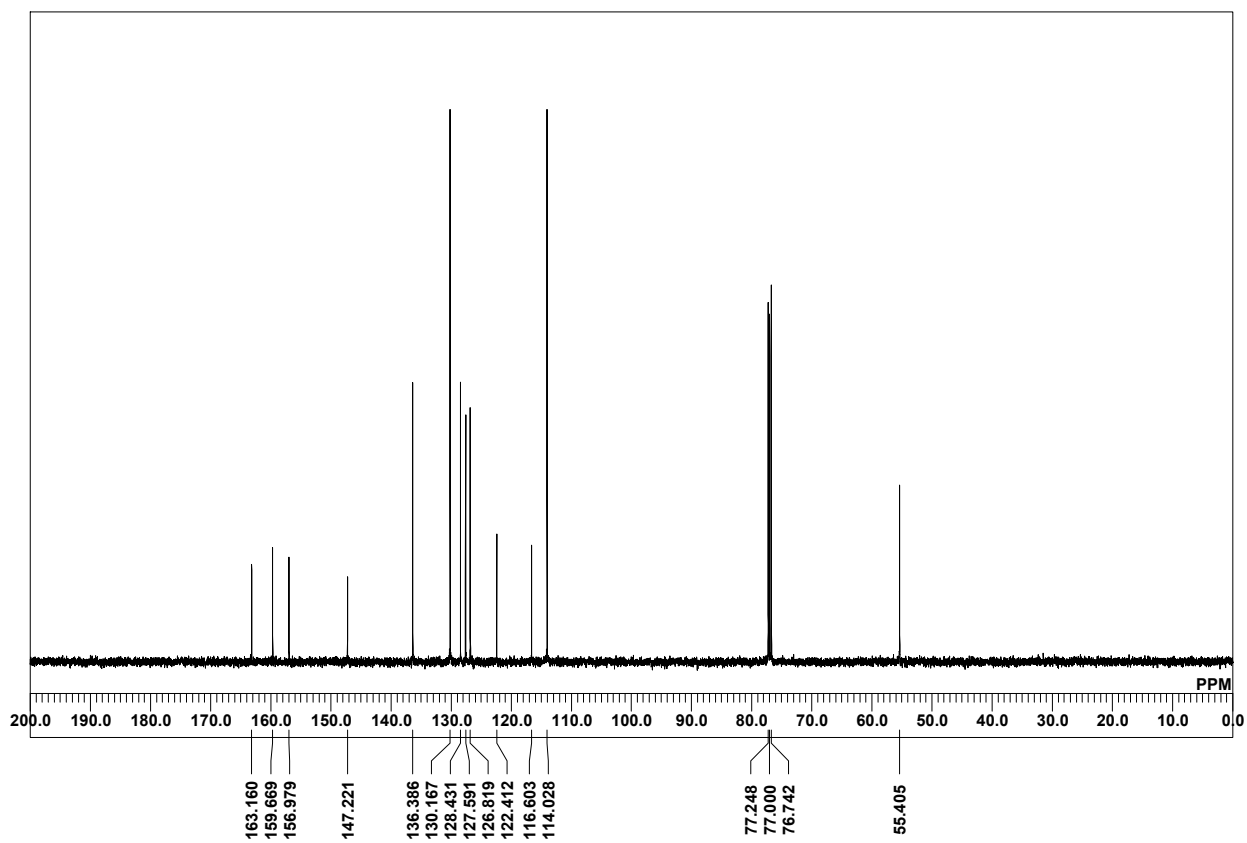
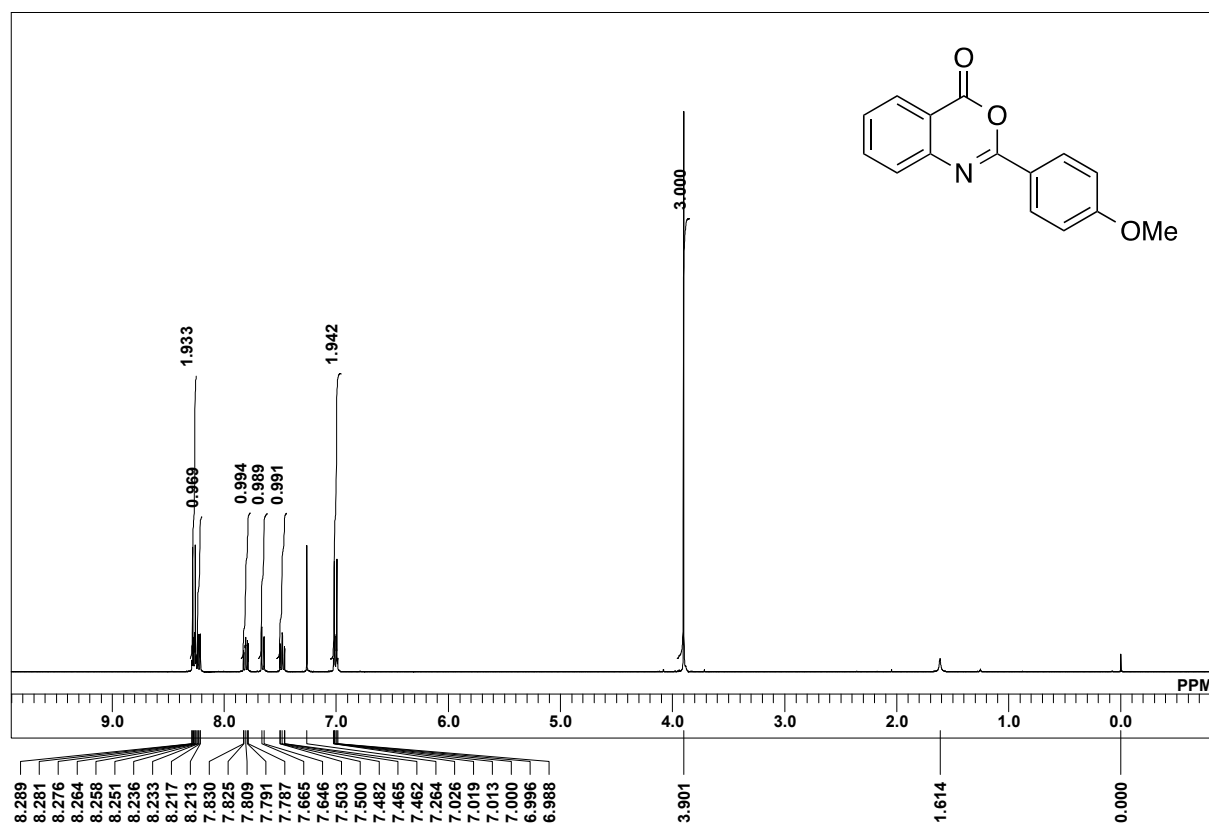
2-Phenyl-4*H*-benzo[4,5]thieno[2,3-*d*][1,3]oxazin-4-one (1ka)



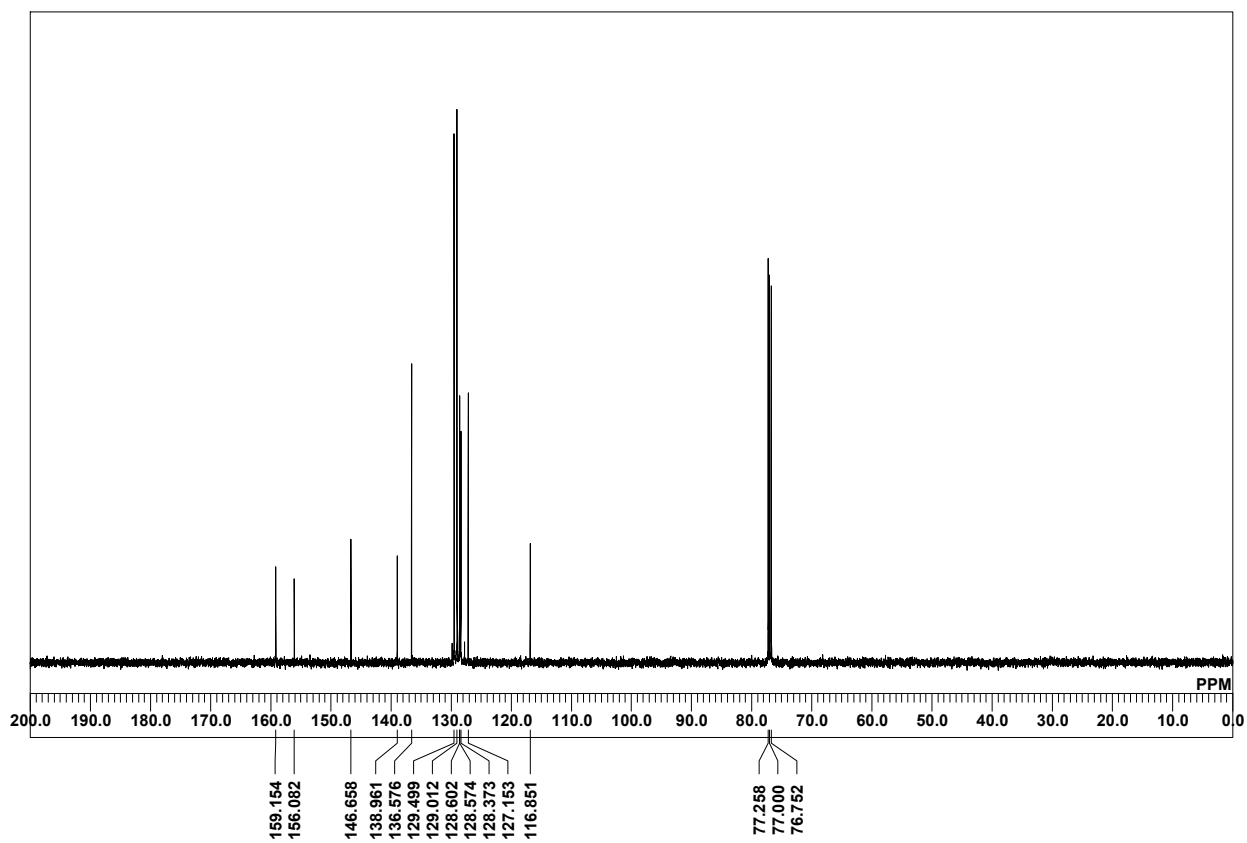
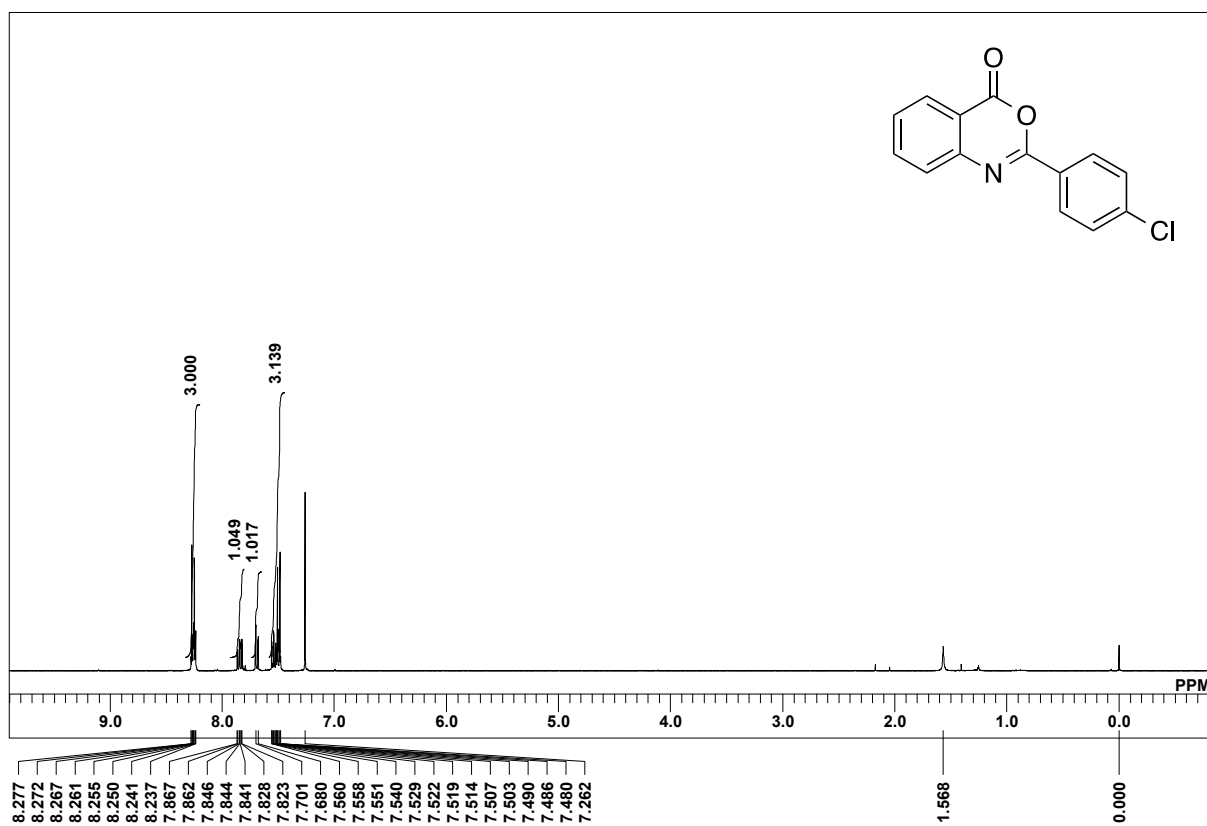
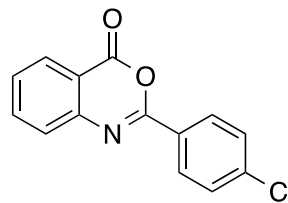
5-Methyl-2-phenyl-6H-1,3-oxazin-6-one (11a)



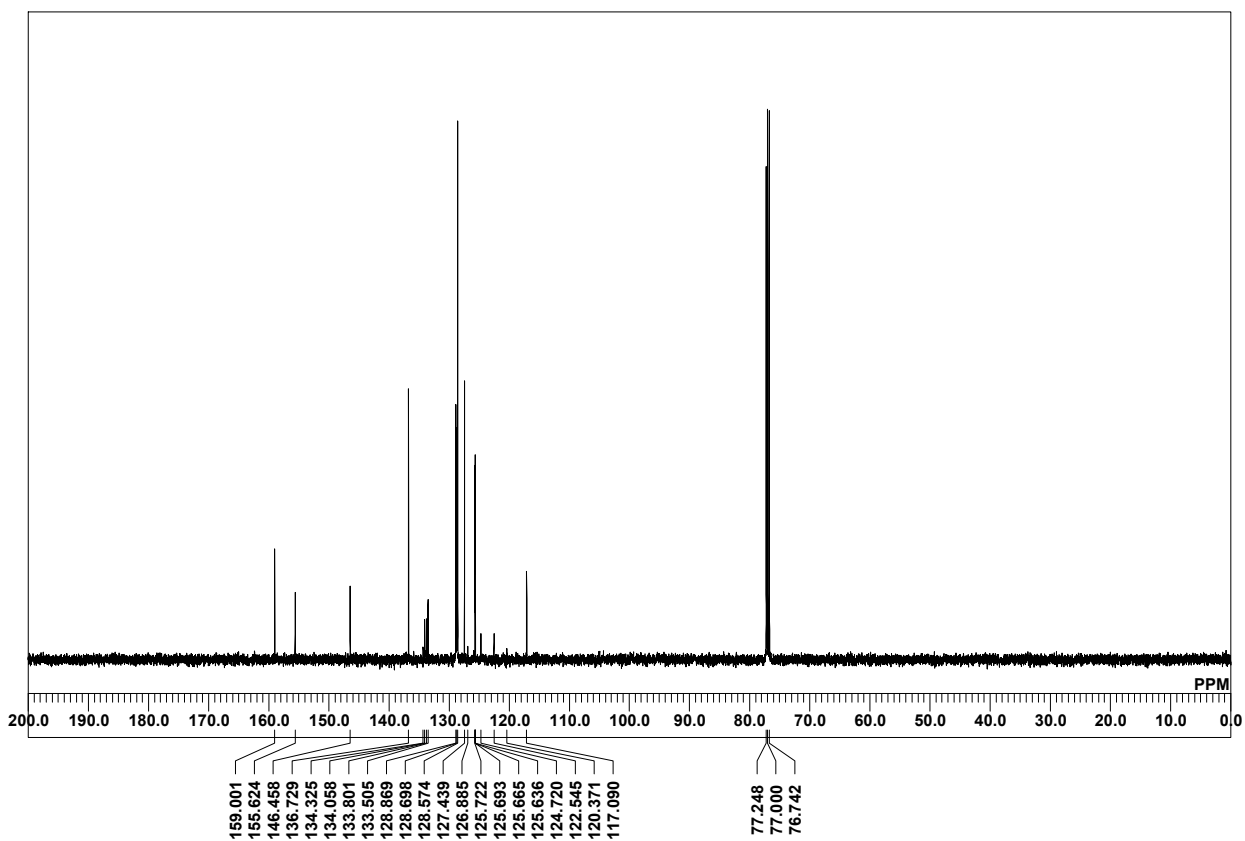
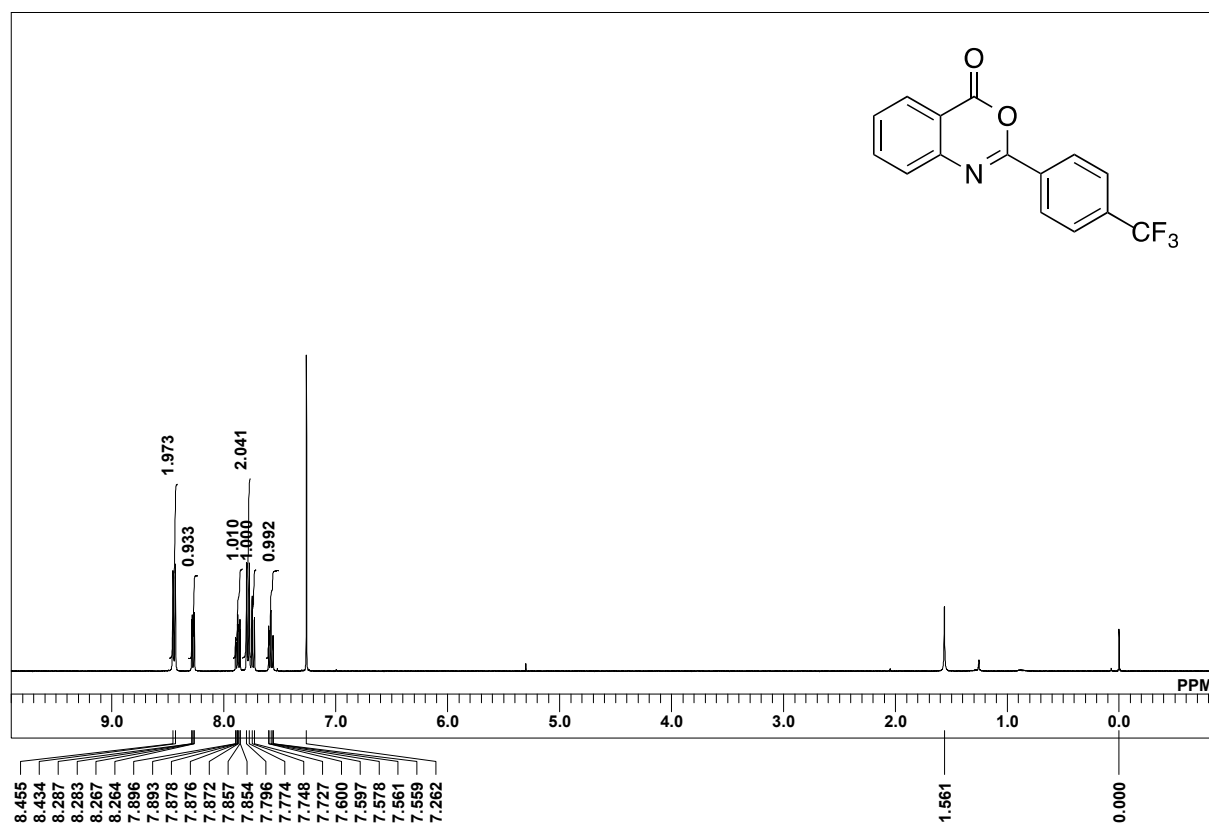
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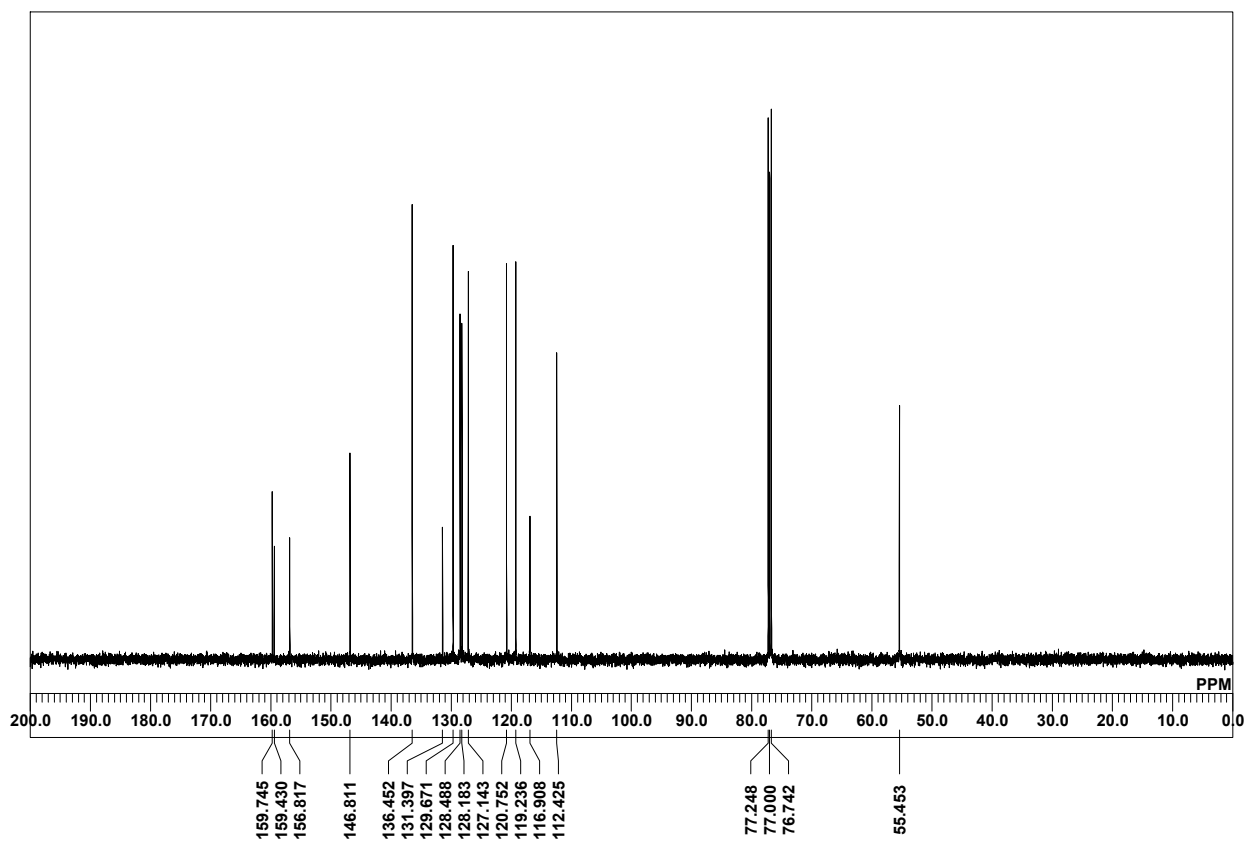
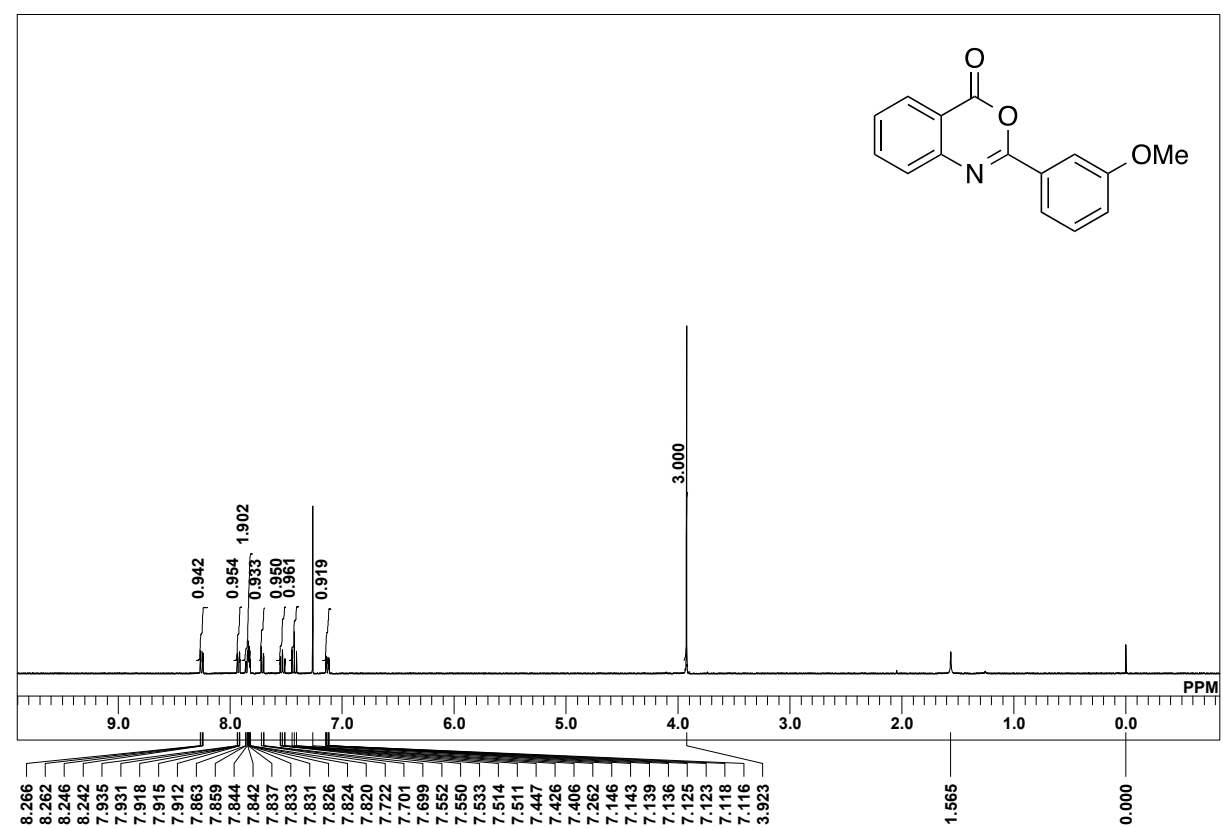
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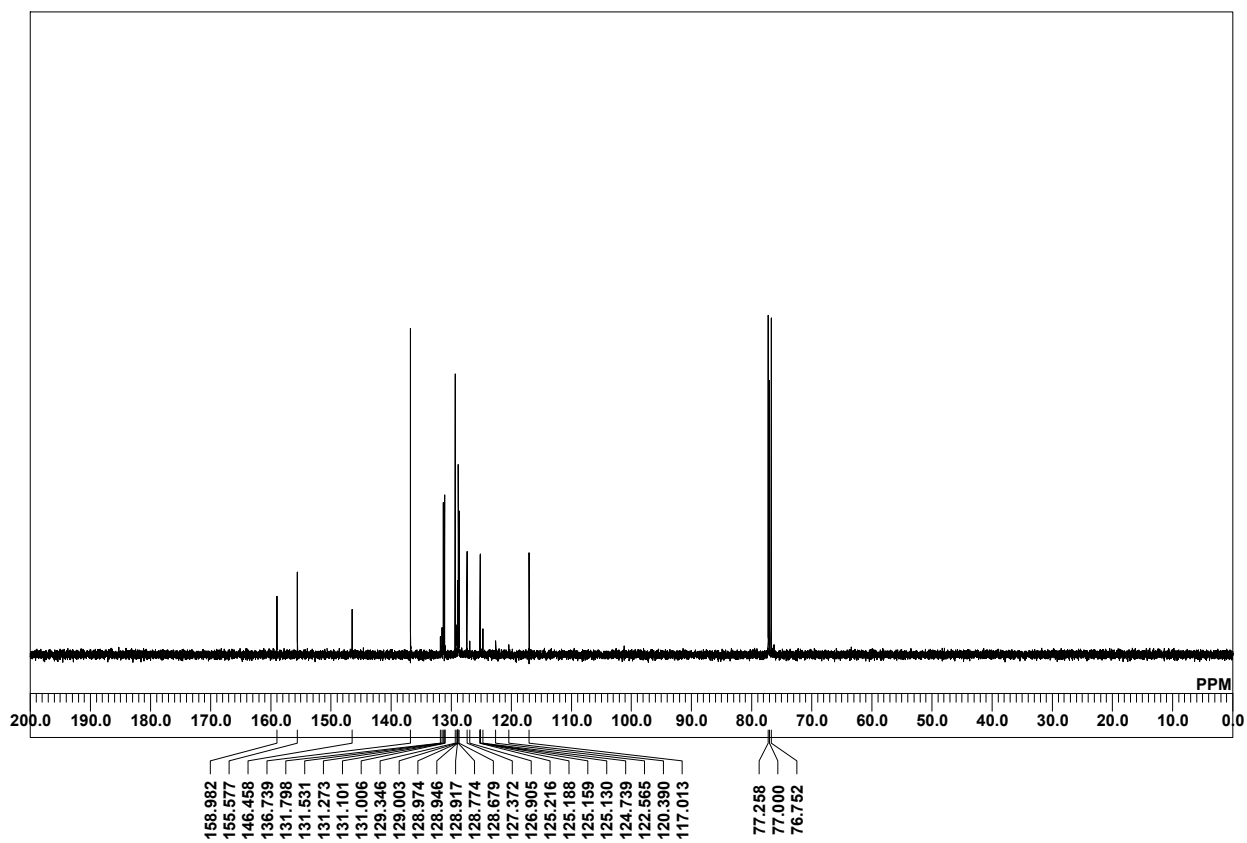
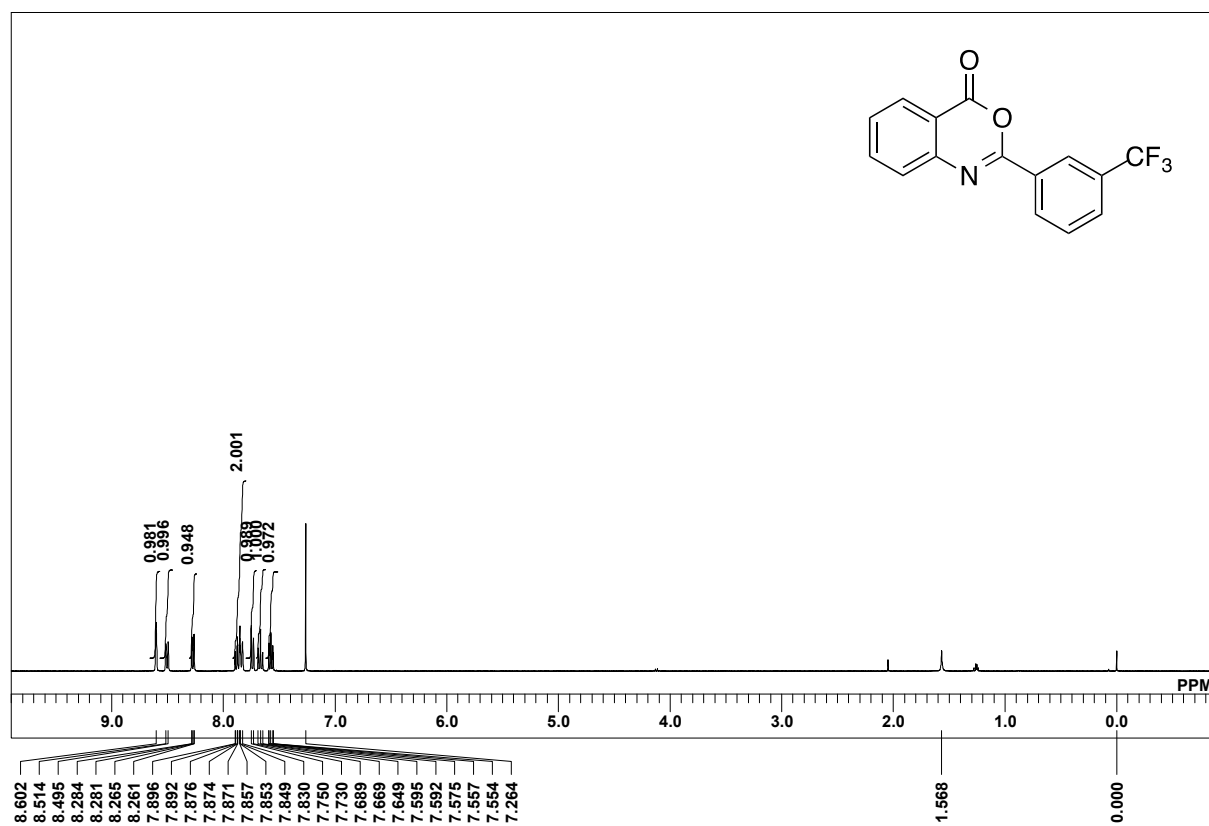
2-(4-(Trifluoromethyl)phenyl)-4H-benzo[d][1,3]oxazin-4-one (1ad)



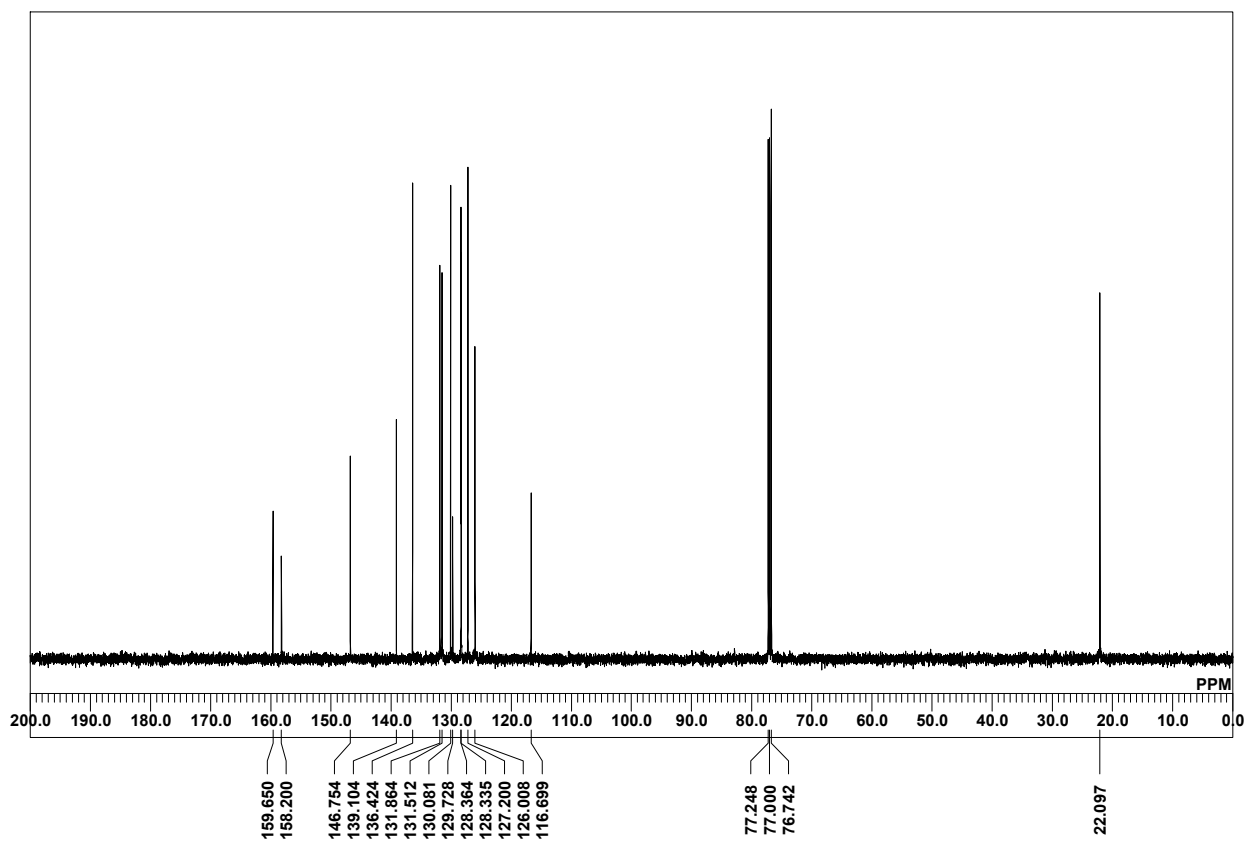
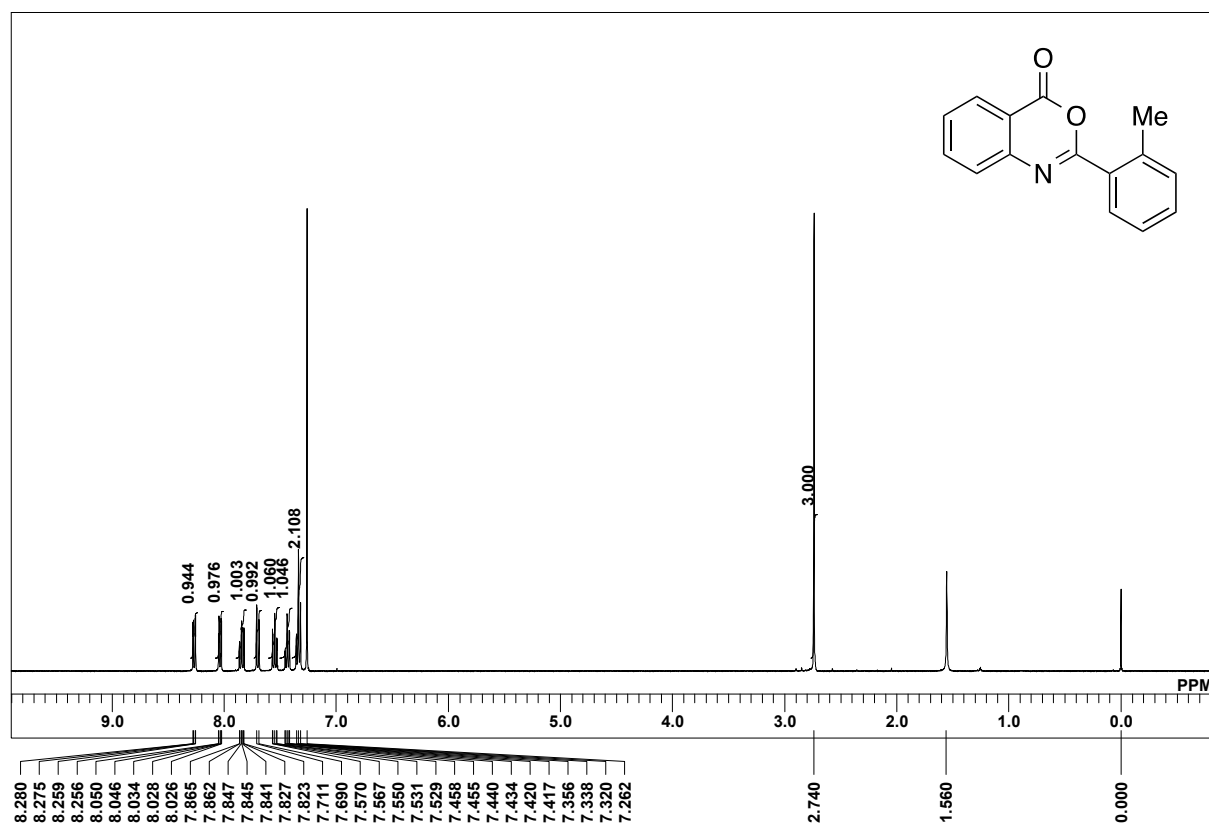
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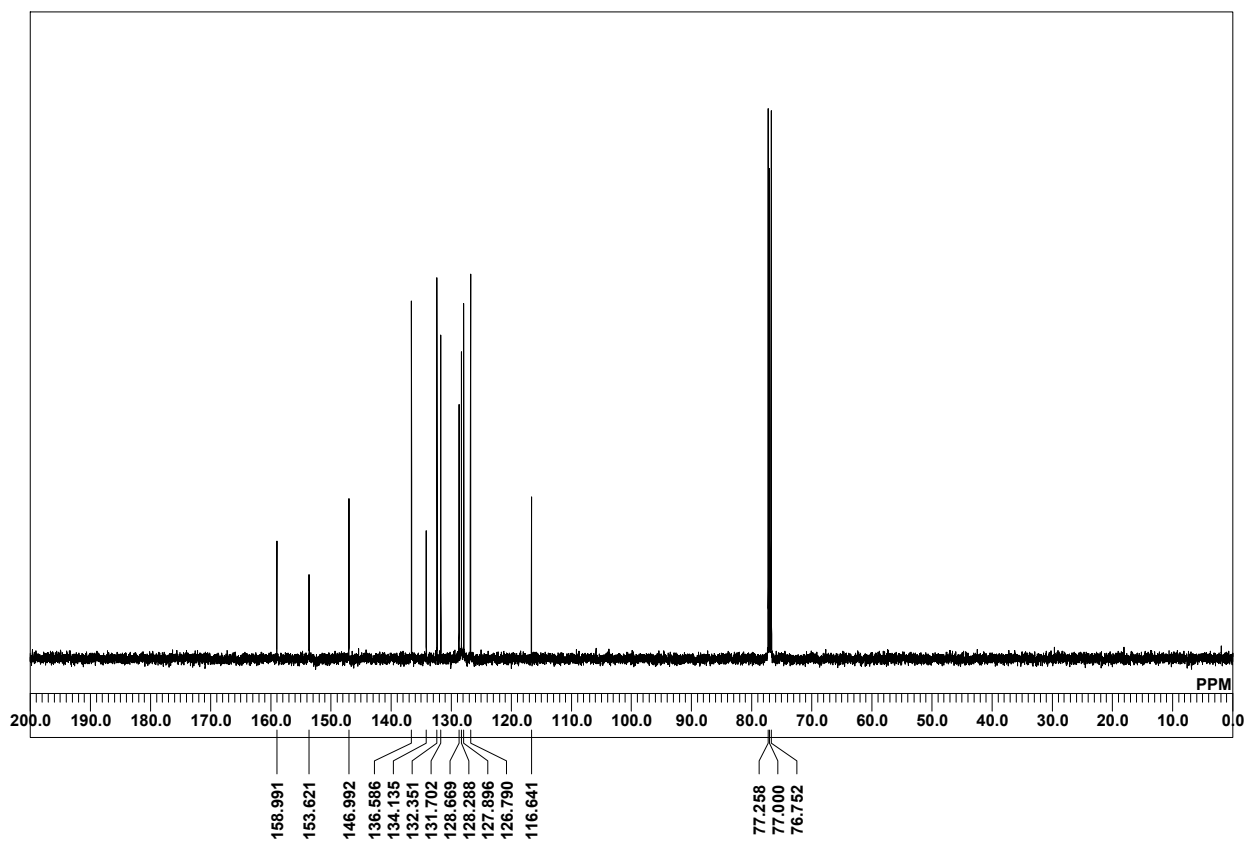
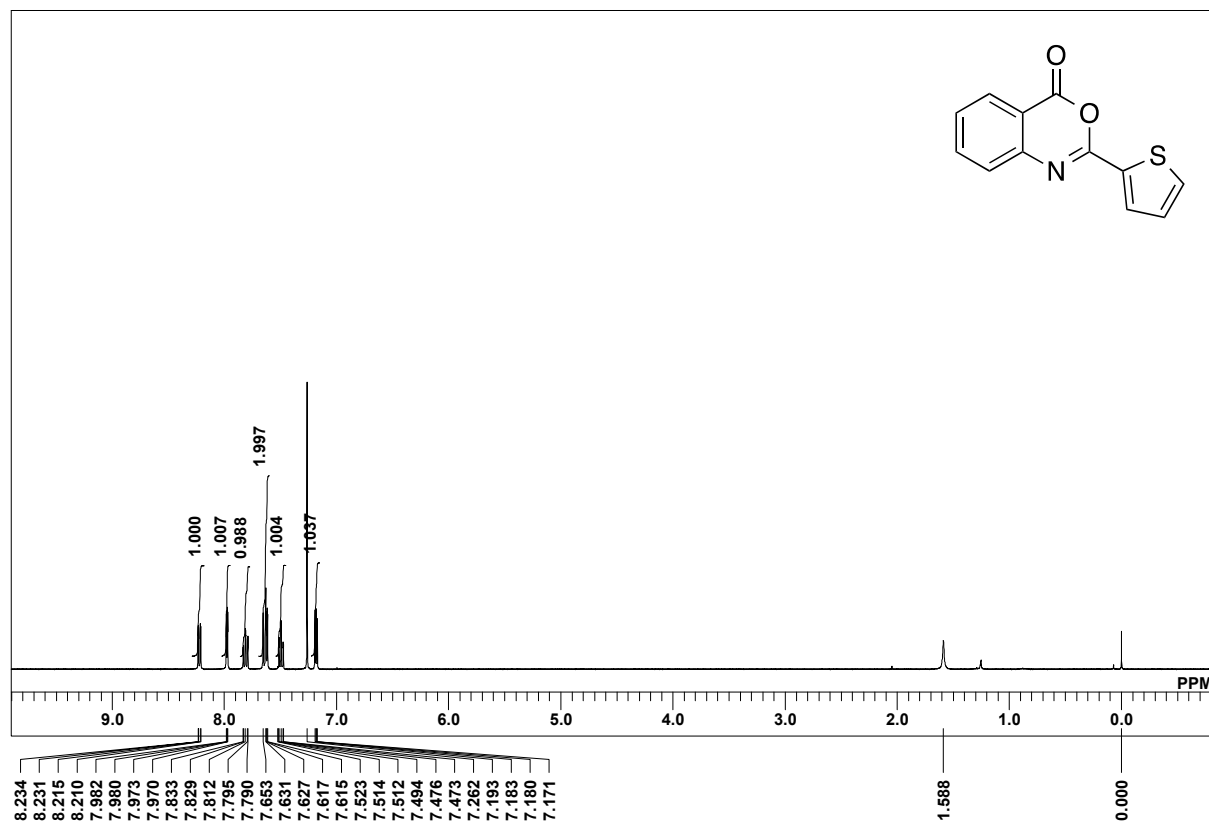
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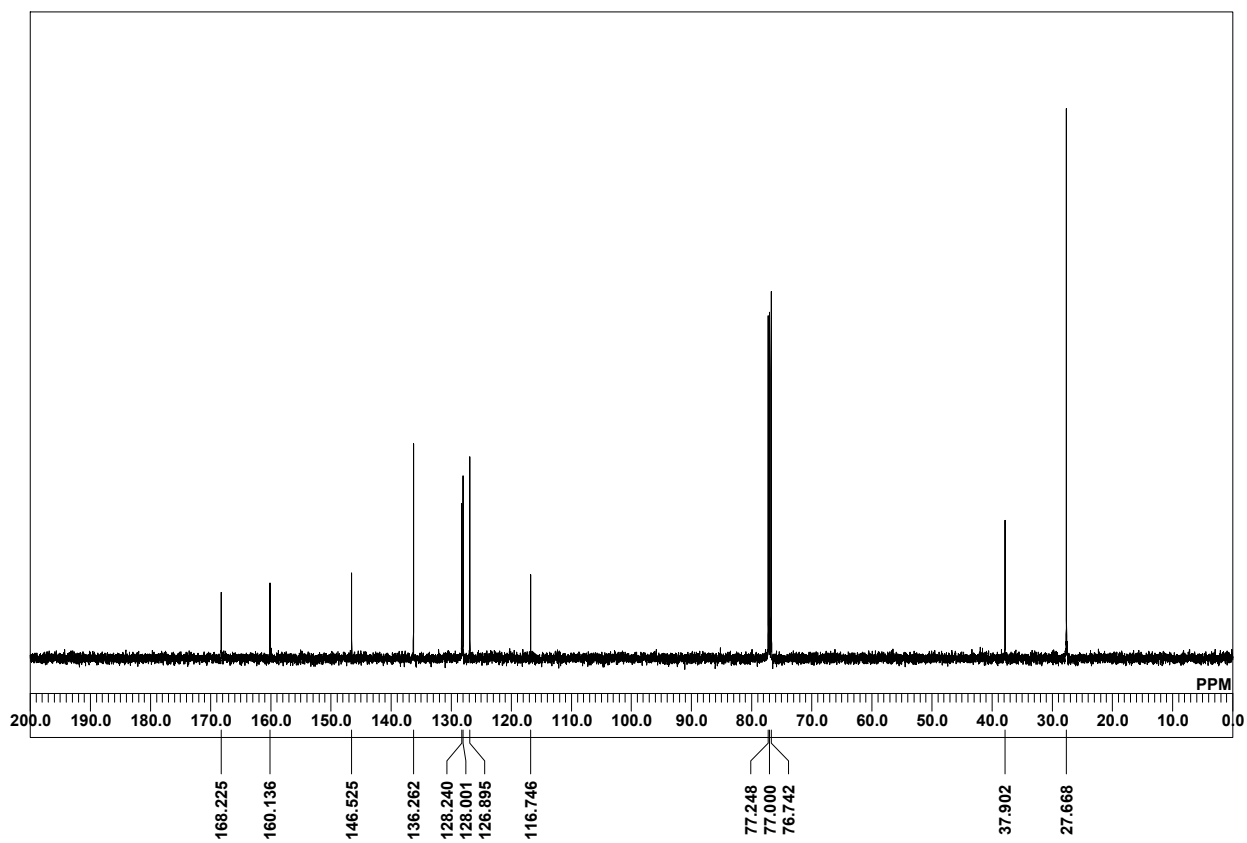
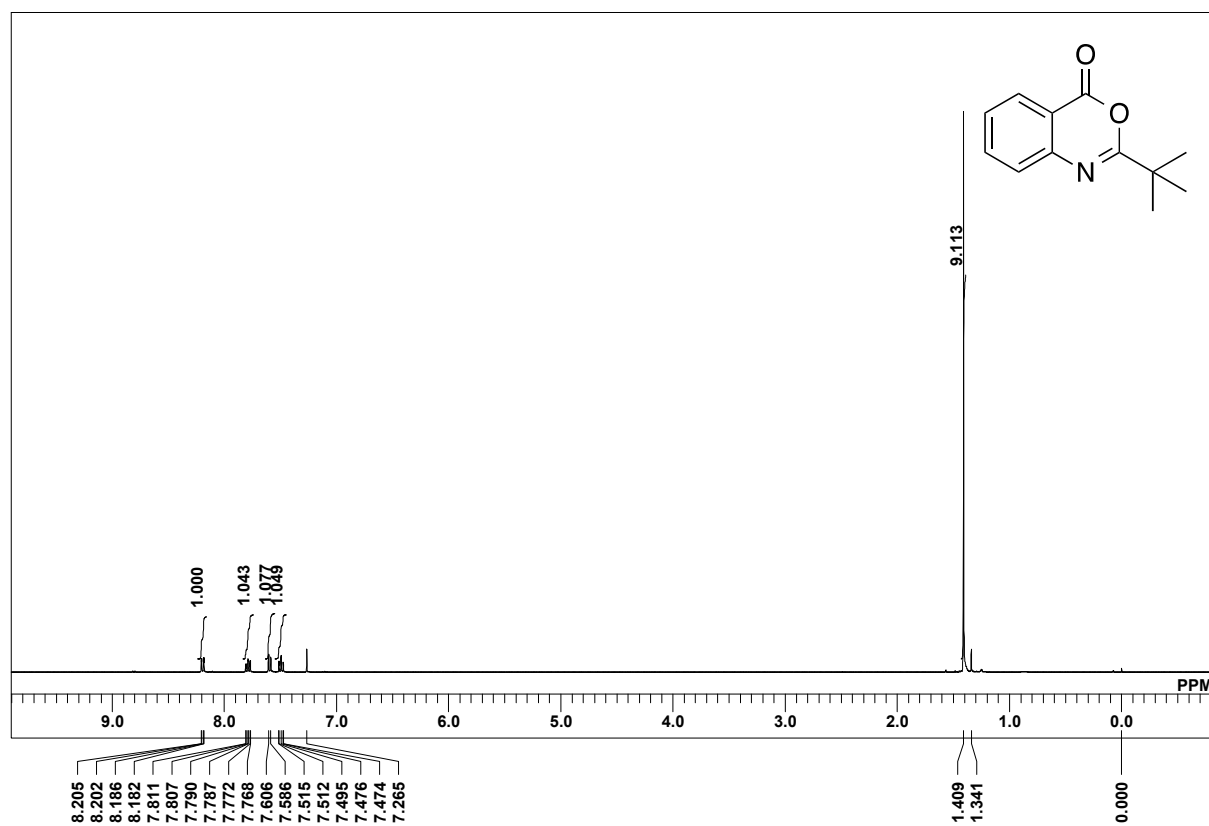
2-(*o*-Tolyl)-4*H*-benzo[*d*][1,3]oxazin-4-one (1ag)



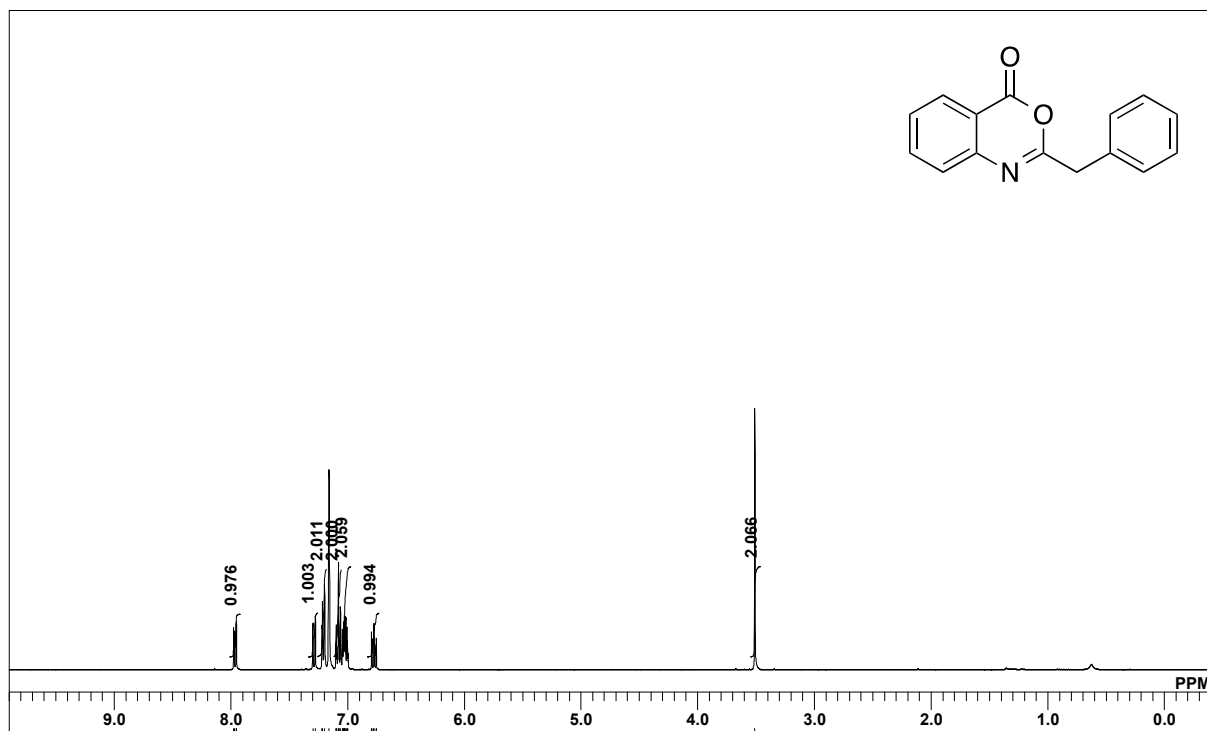
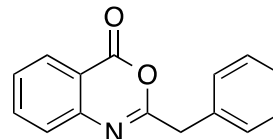
2-(Thiophen-2-yl)-4H-benzo[d][1,3]oxazin-4-one (1ah)



2-(*tert*-Butyl)-4*H*-benzo[*d*][1,3]oxazin-4-one (1ai)



2-Benzyl-4H-benzo[d][1,3]oxazin-4-one (1aj)



7.977
7.971
7.955
7.953
7.297
7.277
7.221
7.216
7.198
7.160
7.100
7.098
7.094
7.080
7.076
7.065
7.062
7.046
7.042
7.038
7.034
7.031
7.027
7.025
7.023
7.016
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7.002
6.997
6.795
6.792
6.775
6.773
6.756
6.754

