Electronic Supplementary Material (ESI) for Green Chemistry.

Supporting Information

Potassium Phosphate-Catalyzed One-pot Synthesis of 3-Aryl-2-oxazolidinones from Epoxides, Amines, and an Atmospheric Carbon Dioxide

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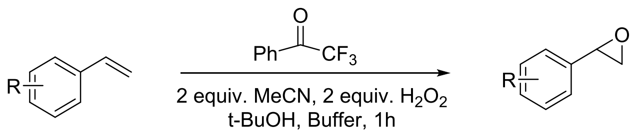
Contents

I. General Information

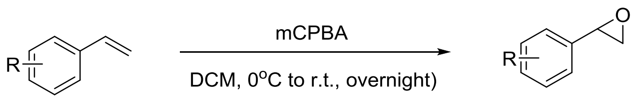
All solvents were obtained by passing through activated alumina columns of solvent purification systems from Glass Contour. *n*-Hexanes and ethyl acetate were used without further purification. Reagents were purchased from Sigma-Aldrich, Alfa Aesar, Acros, and TCI and were used as received. Reactions were carried out in a flame - dried glassware equipped with a stirring bar and capped with a rubber septum under N_2 or CO_2, unless otherwise indicated. Elevated temperatures were maintained in thermostat-controlled oil baths. The TLC plate was carried out on 0.25 mm E. Merck silica gel plates (60F-254) visualized by UV-light (254 nm) and treatment with acidic *p*-anisaldehyde and $KMnO_4$ stain followed by gentle heating. Workup procedures were done in air. Flash chromatography was carried out on Merck 60 silica gel (230 – 400 mesh). IR spectra were measured on a Thermo Scientific Nicolet 6700 spectrometer. ^{1}H and ^{13}C NMR spectra were recorded with Varian spectrometer (400 MHz) spectrometer. ^{1}H NMR spectra were referenced to residual TMS (0 ppm) and reported as follows: chemical shift, multiplicity (s = singlet, d = doublet, t = triplet, q = quartet, dd = doublet of doublets, m = multiplet). Chemical shifts of the ^{13}C NMR spectra were measured relative to $CDCl_3$ (77.16 ppm). Mass spectral data were obtained from the Korea Basic Science Institute (Daegu) on a Jeol JMS 700 high resolution mass spectrometer.

II. General Procedures for 2-Oxazolidiones

A. General Procedure for epoxidation of styrene derivatives

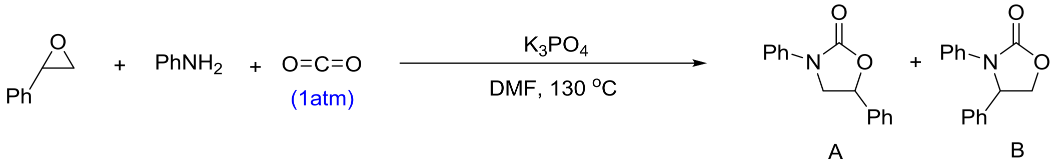


The reaction was carried out according to the literature procedure.[1] Spectral data of 2-(4-chlorophenyl)oxirane, 2-(p-tolyl)oxirane, and 2-(4-(tert-butyl)phenyl)oxirane were consistent with those of the previous report.[1] In cases of halogenated styrene derivatives, epoxidation using *m*-chloroperbenzoic acid was quite efficient.



Reactions were performed in a flame-dried 100 mL Schlenk flask equipped with a stirring bar and a rubber septum. The flask was charged with *m*-chloroperbenzoic acid and dichloromethane (20 mL). The mixture was cooled to 0 ℃ and styrene derivative was slowly added. After 30 min, the reaction mixture was warmed to room temperature and allowed to overnight. Then the reaction mixture was quenched by addition of the sodium carbonate solution and then sodium thiosulfate solution. The reaction mixture was then extracted with dichloromethane and water. The organic layer was combined, dried over anhydrous $MgSO_4$, filtered, and concentrated under reduced pressures. The crude product was purified by flash chromatography on silica gel with *n*-hexane and ethyl acetate.

B. General Procedure for 2-Oxazolidiones



Reactions were performed in a tube schlenk equipped with a stirring bar and capped with a rubber cap and the followings were placed in the tube in order: 20 mol% of K_3PO_4 (43 mg, 0.2 mmol), 5 equiv. of styrene oxide (0.6 g, 5 mmol), 1 equiv. of aniline (93 µL, 1 mmol), and 2mL of DMF. While they were mixing together, the tube was charged with CO_2 by a balloon for 15 seconds. The mixture was stirred at 130 °C for 19 h under CO_2 (using a balloon). The color of the reaction mixture changed from light yellow to dark brown. After the reaction, the mixture was concentrated under reduced pressures. Purification by flash chromatography on silica gel with *n*-hexane and ethyl acetate afforded oxazolidiones. The products were characterized by ^{1}H NMR, ^{13}C NMR, IR, and HRMS, and their melting points were measured.

C. 10 Gram-Scale Experiment

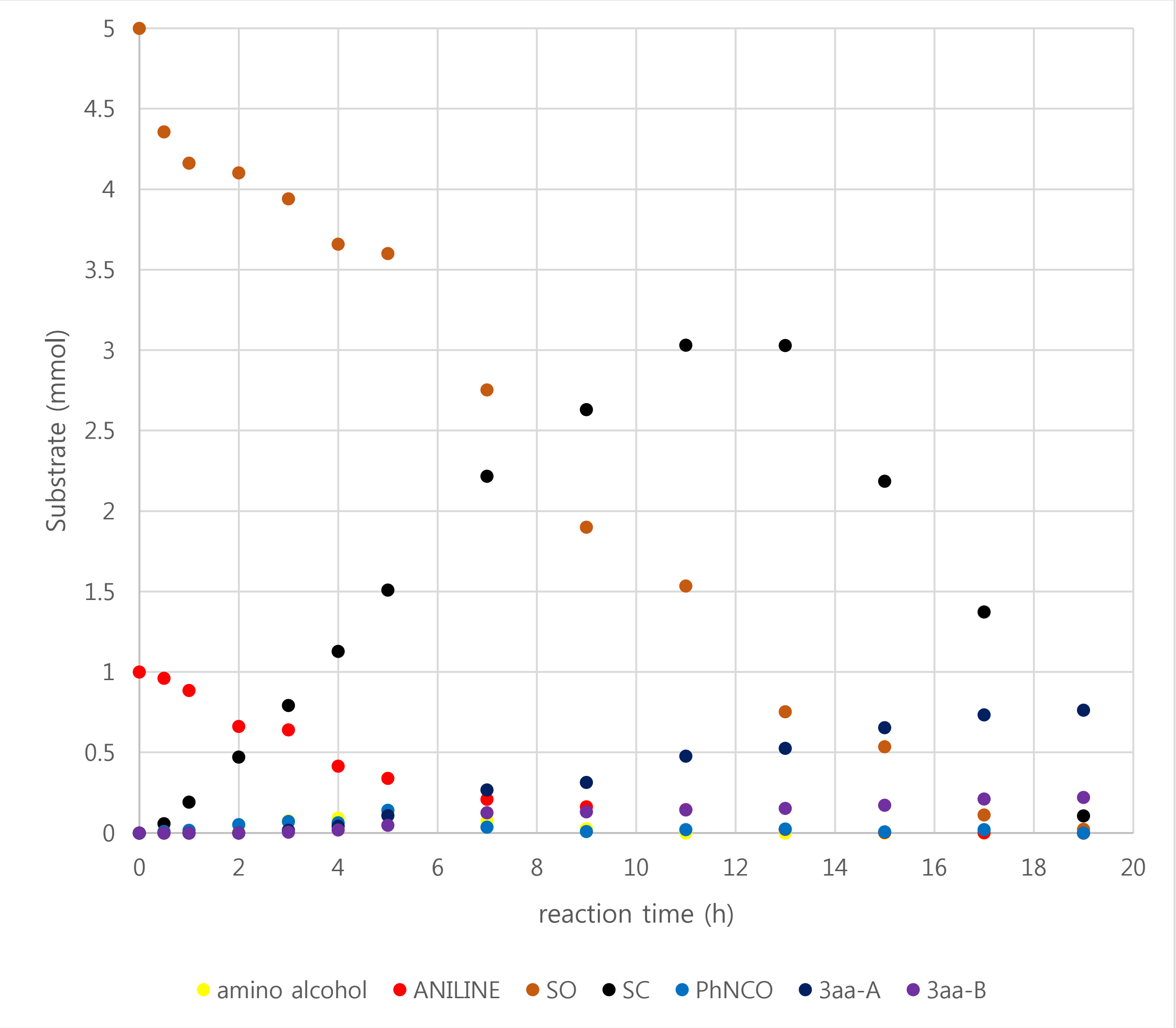
K_3PO_4 (20 mol%, 4.6 g), styrene oxide (540 mmol, 62 mL), aniline (108 mmol, 10.05 g), and DMF (100 mL) were place in a flame-dried two-necked 500 mL schlenk flask. Before the reaction flask was put to an oil bath, it was purged CO_2 for 30 seconds at room temperature. The reaction mixture was then heated at 130 °C for 19 h. To provide CO_2 smoothly and continually, the CO_2 balloon was recharged in every 3 h with a 18G needle. After the reaction went completion, the solvent was removed under reduced pressures. The crude product was purified by flash chromatography with hexane and ethyl acetate to afford products (total 93 % isolated yield).

III. Monitoring the synthesis of oxazolidinones

A. GC analysis

K_3PO_4 (43 mg, 0.2 mmol), styrene oxide 4 (0.6 g, 5 mmol), aniline (93 μL, 1 mmol), and DMF (2 mL) were placed in an oven-dried tube schlenk. Mesitylene (139 μL, 1 mmol) as an internal standard was added to the reaction mixture. The reaction mixture was stirred under carbon dioxide for 15 sec at room temperature. The reaction tube was heated at 130 °C. After 0 min, 30 min, 1 h, 2 h, 3 h, 4 h, 5 h, 7 h, 9 h, 11 h, 13 h, 15 h, 17 h and 19 h of reaction times, small portions of the reaction medium (about 10 μL) were diluted in dichloromethane for GC-analysis.

Figure S1. Reaction profile for the oxazolidione synthesis from styrene oxide, aniline, and CO_2



(SO = styrene oxide; SC = styrene carbonate)

Figure S2. Expanded reaction profile for the oxazolidione synthesis from styrene oxide, aniline, and CO_2

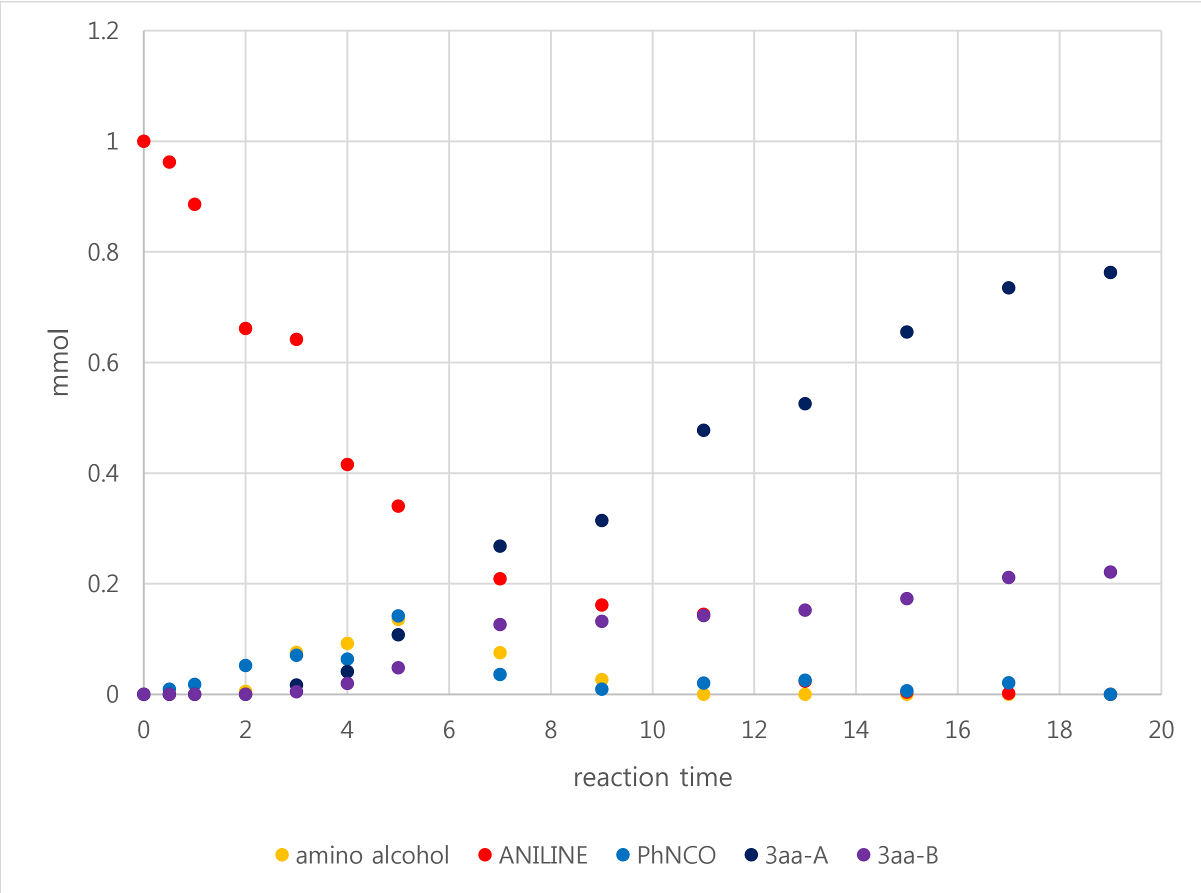


Figure S3. Reaction profile for aniline

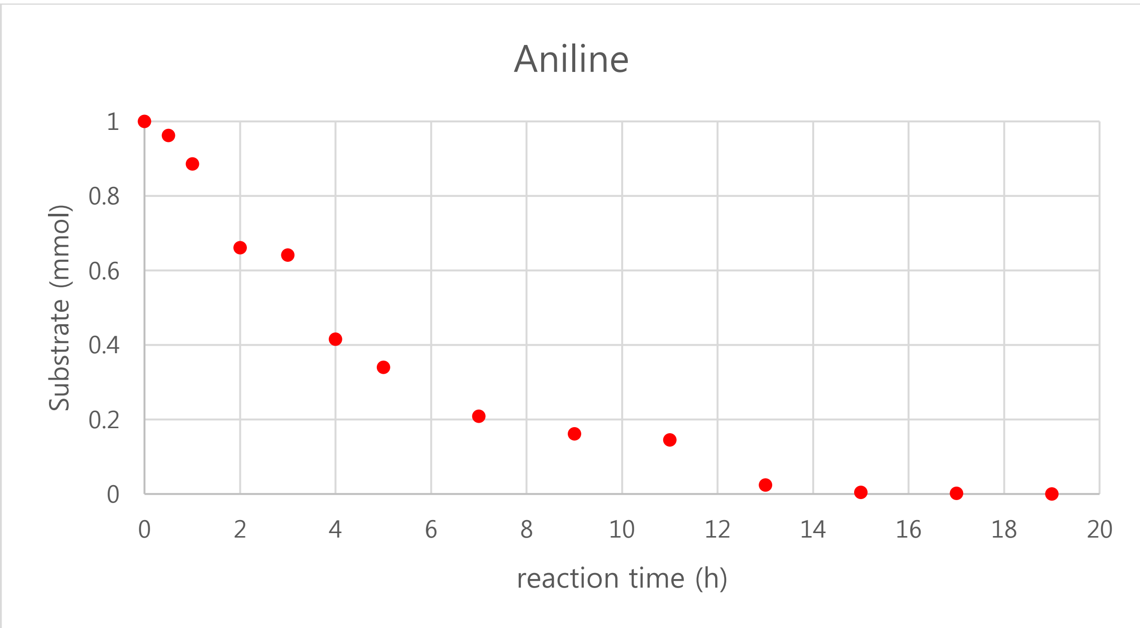


Figure S4. Reaction profile for phenyl isocyante

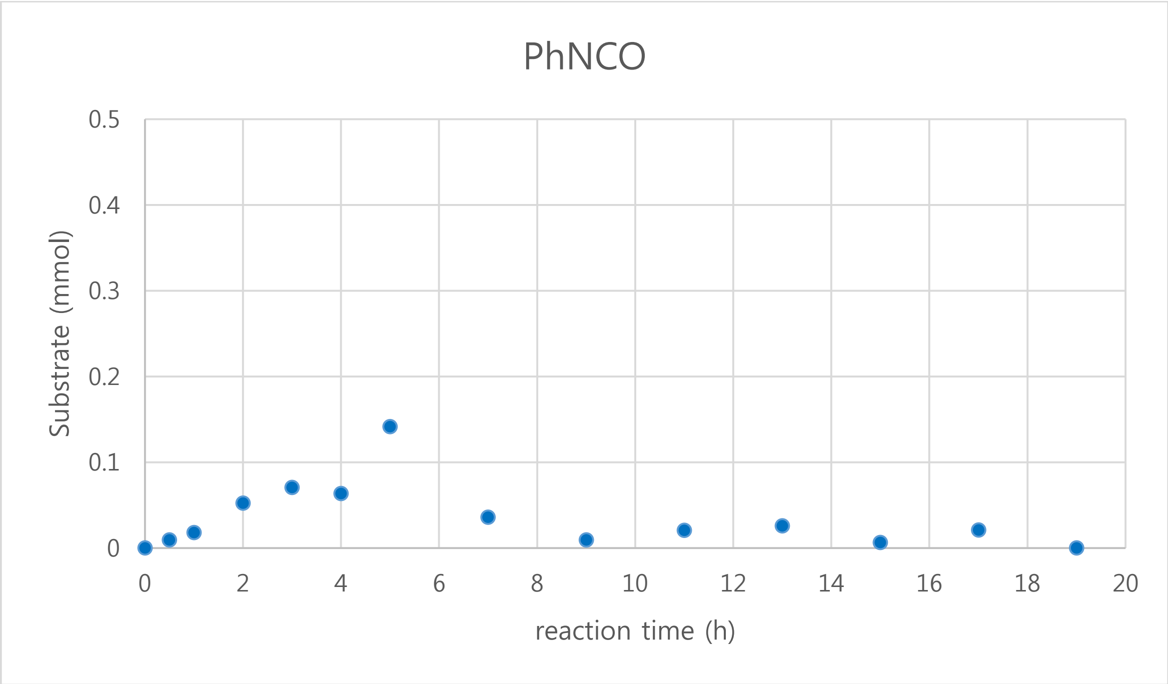


Figure S5. Reaction profile for amino alcohol

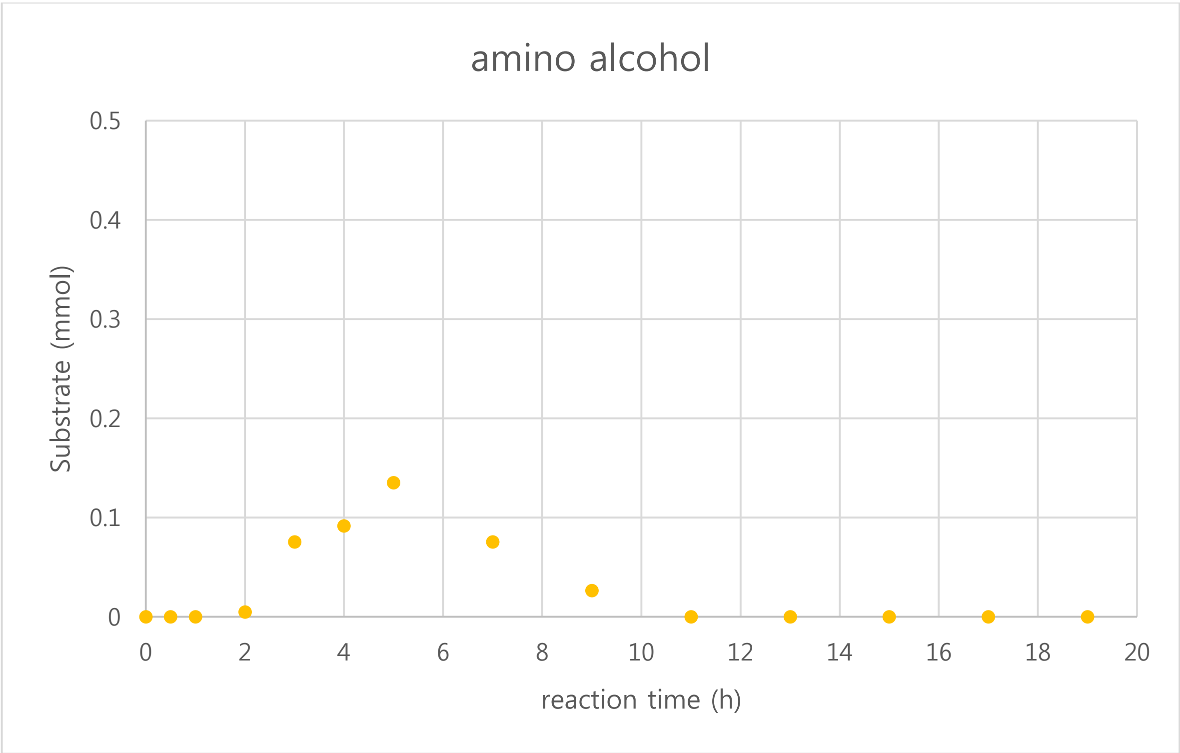


Figure S6. Reaction profile for intermediate

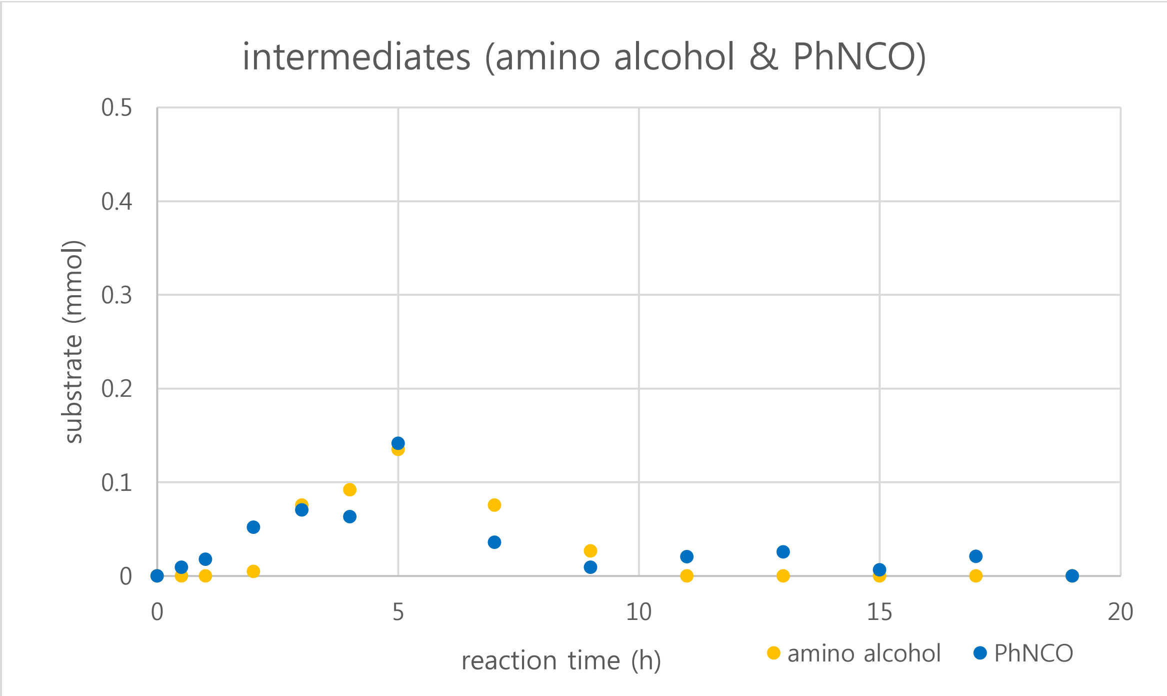


Figure S7. Reaction profile for styrene oxide

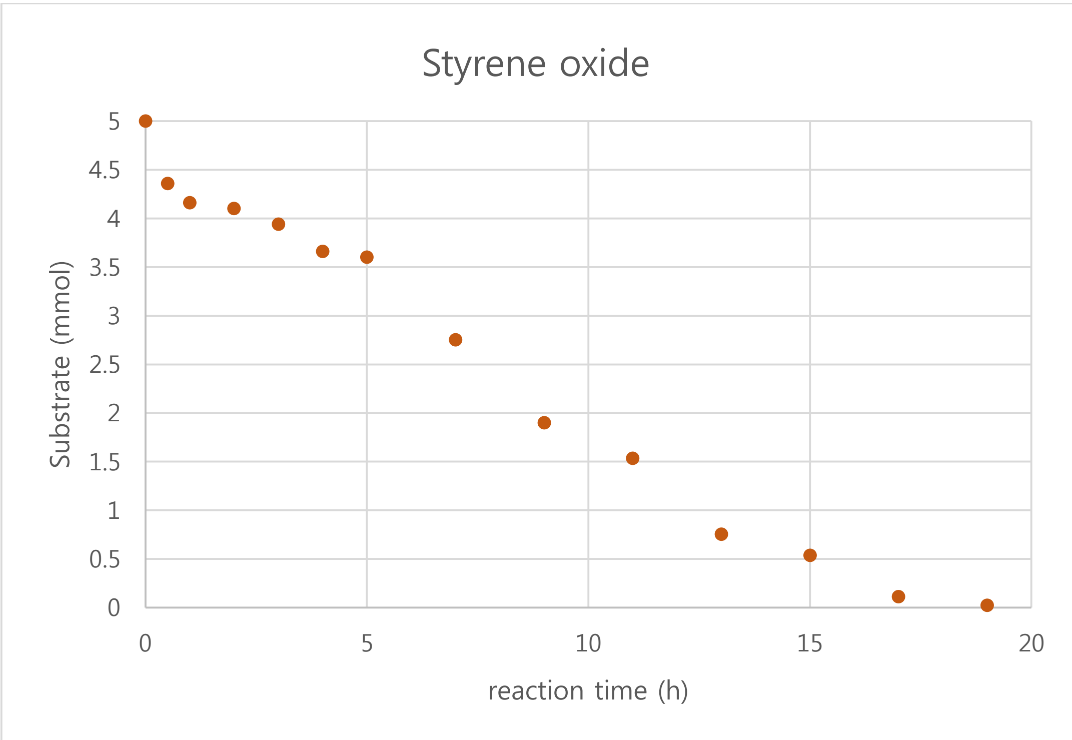


Figure S8. Reaction profile for styrene carbonate

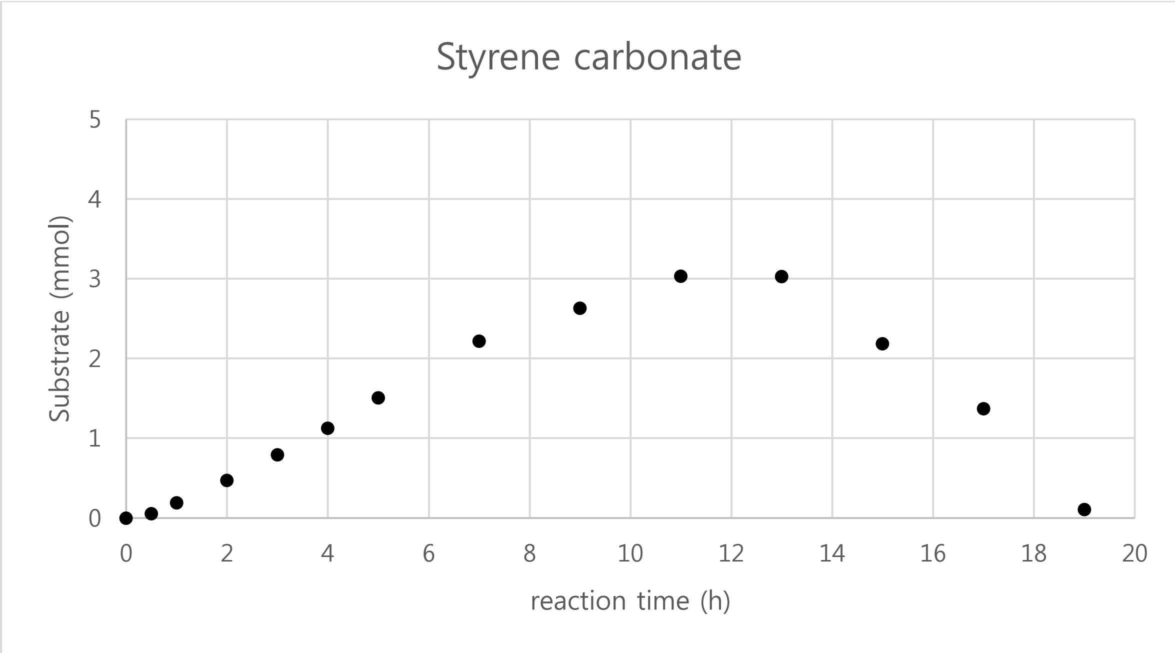


Figure S9. Reaction profile for styrene oxide and styrene carbonate

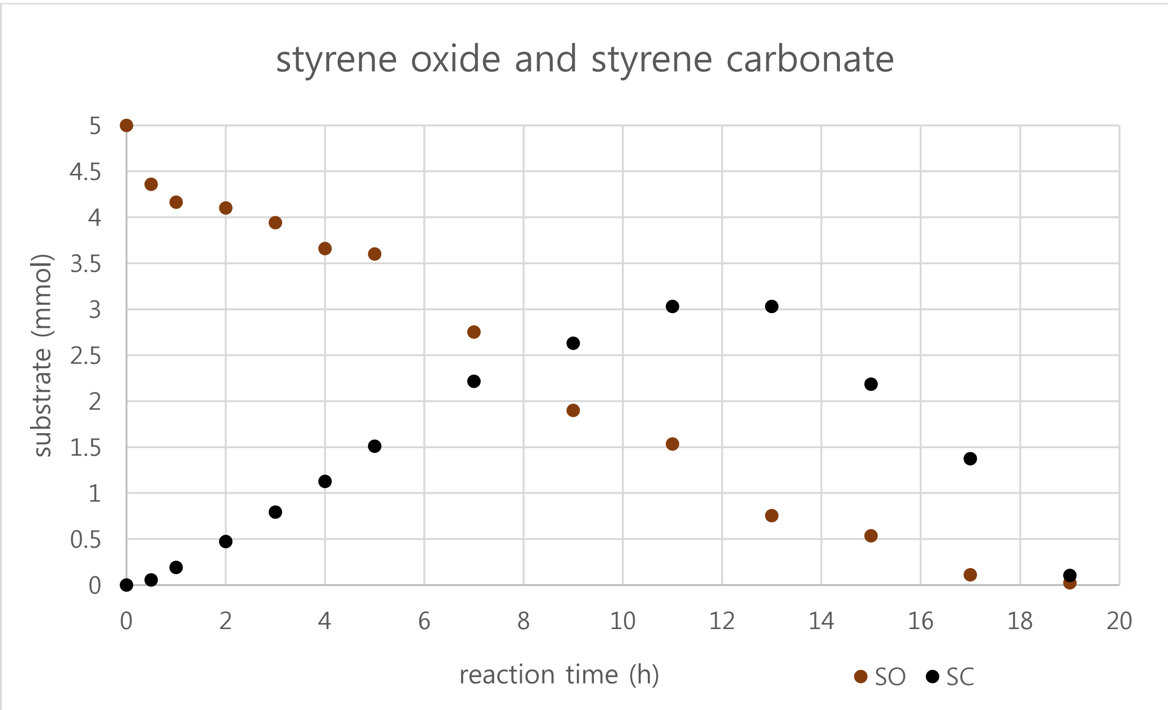
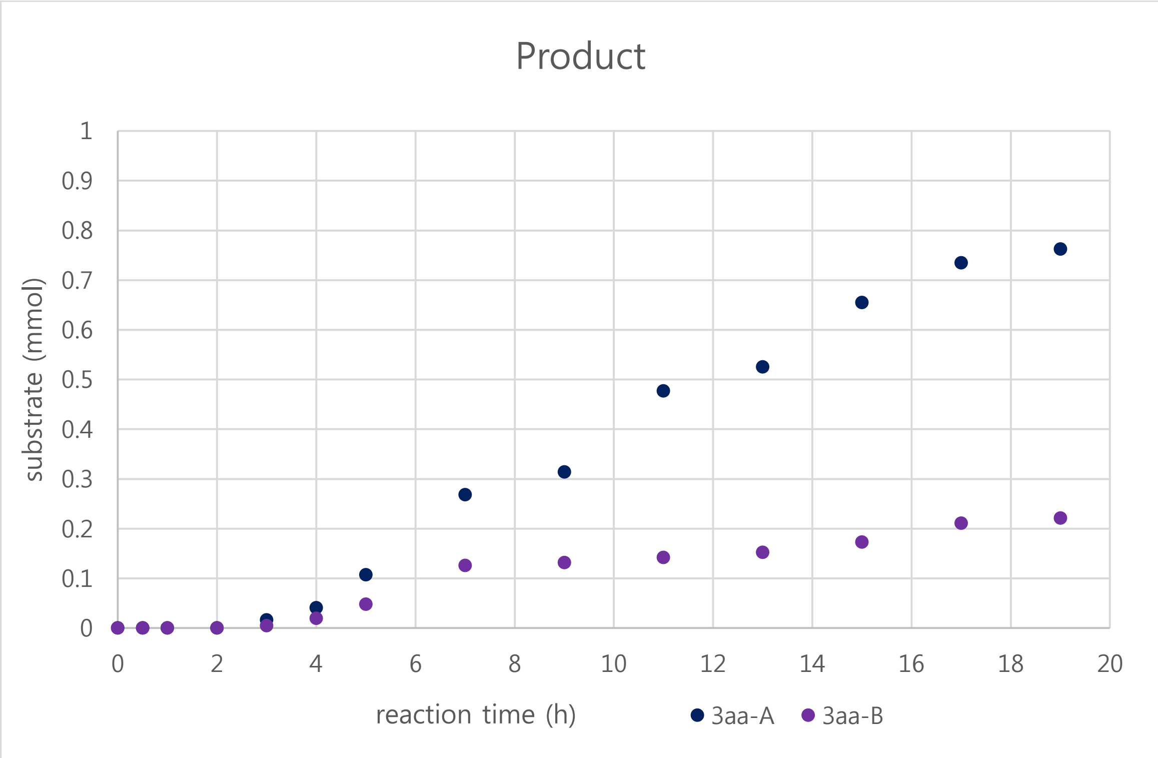
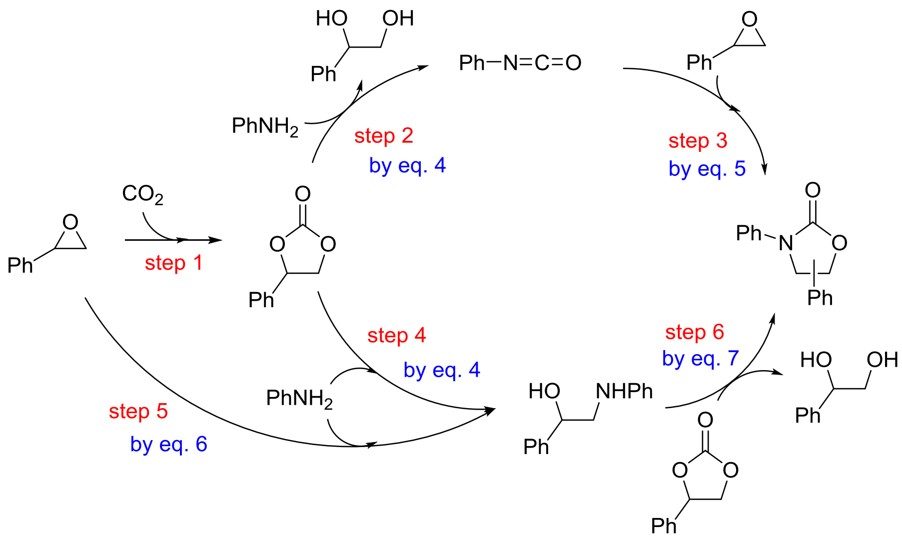


Figure S10. Reaction profile for **3aa-A** and **3aa-B**



IV. Discussion of the Reaction Mechanism

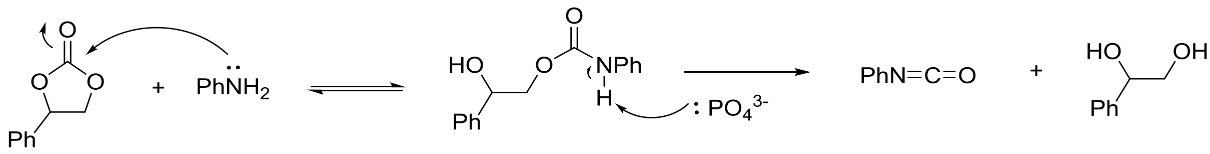
In the scheme 2, we checked each step with or without K_3PO_4.



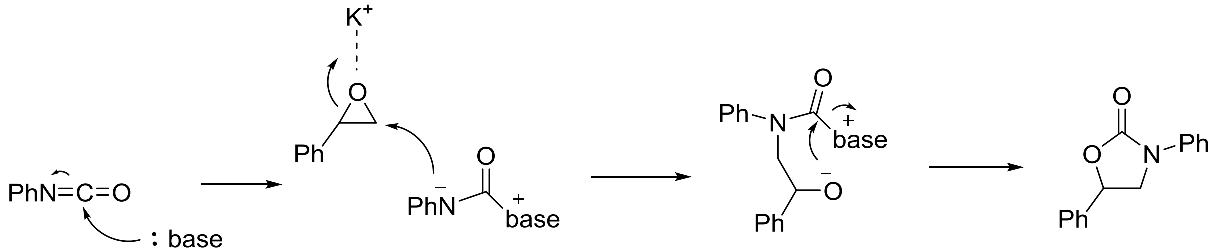
Step 1. Styrene oxide was reacted with carbon dioxide to generate styrene carbonate. In the presence or absence of K_3PO_4, the yield of styrene carbonate is 35% and 19 %, respectively. Potassium could activate styrene oxide by its oxophilicity.

Step *2.* Styrene carbonate with aniline could generate phenyl isocyanate, a key intermediate. In the presence of K_3PO_4, the reaction went to the final product. In order to confirm the formation of phenyl isocyanate, a reaction was monitored by GC-MS. We found the formation of phenyl isocyanate after 30 min of a reaction time. However, without K_3PO_4, no reaction occurred.

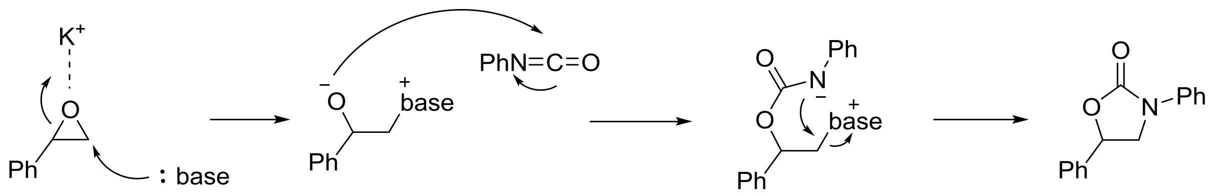
Aniline attacks the carbonyl carbon of styrene oxide to afford a carbamate. We assume that this is a reversible step. However, in the presence of K_3PO_4, the proton on the carbamate could be deprotonated by phosphate anion, leading to the formation of diol and phenyl isocyanate.



Step 3. A reaction of styrene oxide with phenyl isocyanate afforded the final product. This step was proven in equation 5, showing an overall 97 % yield. Without K_3PO_4, no reaction was observed. The reaction is a well-known reaction (see: *ChemCatChem* 2015, **7**, 1145 -1151 and references therein). The reaction mechanism might be similar to that of previously reported cases. Thus, the potassium ion can coordinate to the epoxide forming adducts in which the epoxide ring is activated toward ring-opening. In the meantime, the phosphate reacts with phenyl isocyanate to activate. Nucleophilic attack of the potassium coordinated species on the carbonyl of the activated phenyl isocyanate leads to the product.



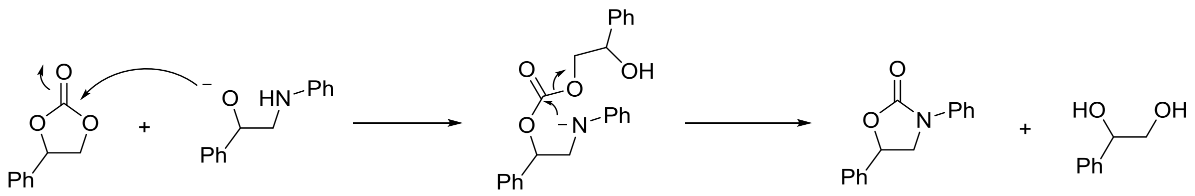
Alternatively, the following reaction scheme could be considered.



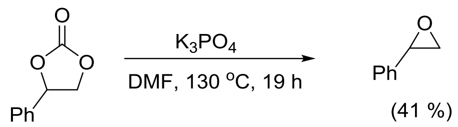
Step 4. A formation of amino alcohol from a reaction between styrene carbonate and aniline in the presence of a catalyst is a well-known reaction (see: *Synlett* 2006, 1374-1378).

Step 5. The reaction between styrene oxide and aniline in the presence of K_3PO_4 afforded 11% of amino alcohol (eq. 6). Without K_3PO_4, no reaction occurred. So, we could identify the catalyst effect on the reaction even though the effect was not great. As already mentioned, a potassium ion can coordinate to the epoxide that the epoxide ring is activated toward ring-opening.

Step 6. In the presence of K_3PO_4, a quantitative yield of products was observed (shown in equation 7). However, without K_3PO_4, no reaction occurred. The reaction between amino alcohol and acyclic carbonate in the presence of a combination of HCO_3^- anion with potassium or imidazolium cation was recently published (*Eur. J. Org. Chem.* 2016, 3514-3518). The reaction mechanism might be similar to that of the published paper: the PO_4^{3-} base acts as a nucleophile to activate the alcohol function to initiate transesterification reactions. The reaction might be followed by O→N acyl transfer migration, and the cyclization affords the final product.

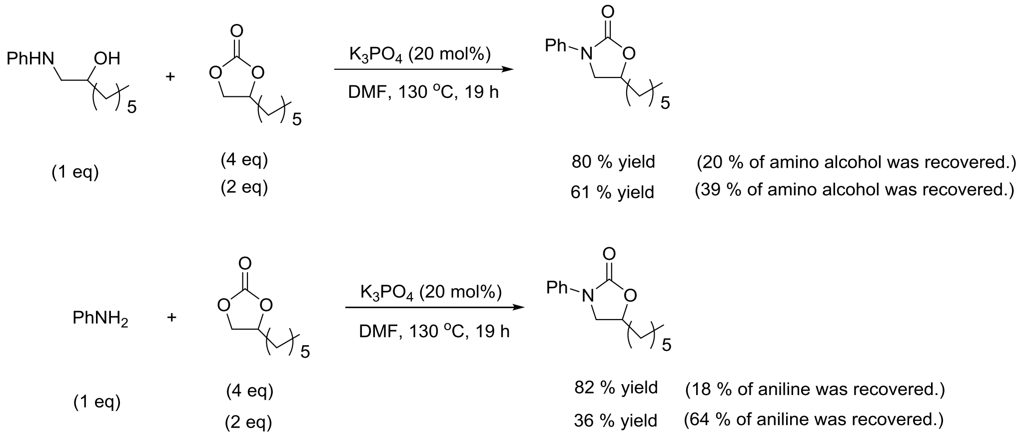


A. Thermal decomposition of styrene carbonate.



Styrene carbonate (0.16 g, 1 mmol) reacted with potassium phosphate (43 mg, 20 mol %) in 1 mL of DMF at 130 °C for 19 h. Styrene oxide was isolated in 41 % yield.

B. Reactions of aliphatic cyclic carbonate with amino alcohols and aniline



The yield of oxazolidinone was highly sensitive to the amount of cyclic carbonate used.

C. ^{1}H NMR spectroscopic investigation of reaction intermediates

Aniline (46 μL, 0.5 mmol), styrene oxide (286 μL, 2.5 mmol), and potassium phosphate (21 mg, 20 mol %) in d_7-DMF (1.0 g) was placed in an oven dried schlenk tube. The reaction mixture was heated to 130 °C in the presence of atmospheric CO_2. At the indicating time, ^{1}H NMR spectra were taken at room temperature after 0 h, 1 h, 2 h, 3 h, 4 h, 5 h ,8 h, 11 h, 13 h, 15 h, 17 h, and 19 h, respectively (Figures S11 and S12).

Figure S11. ^{1}H NMR spectra for investigation of reaction intermediates

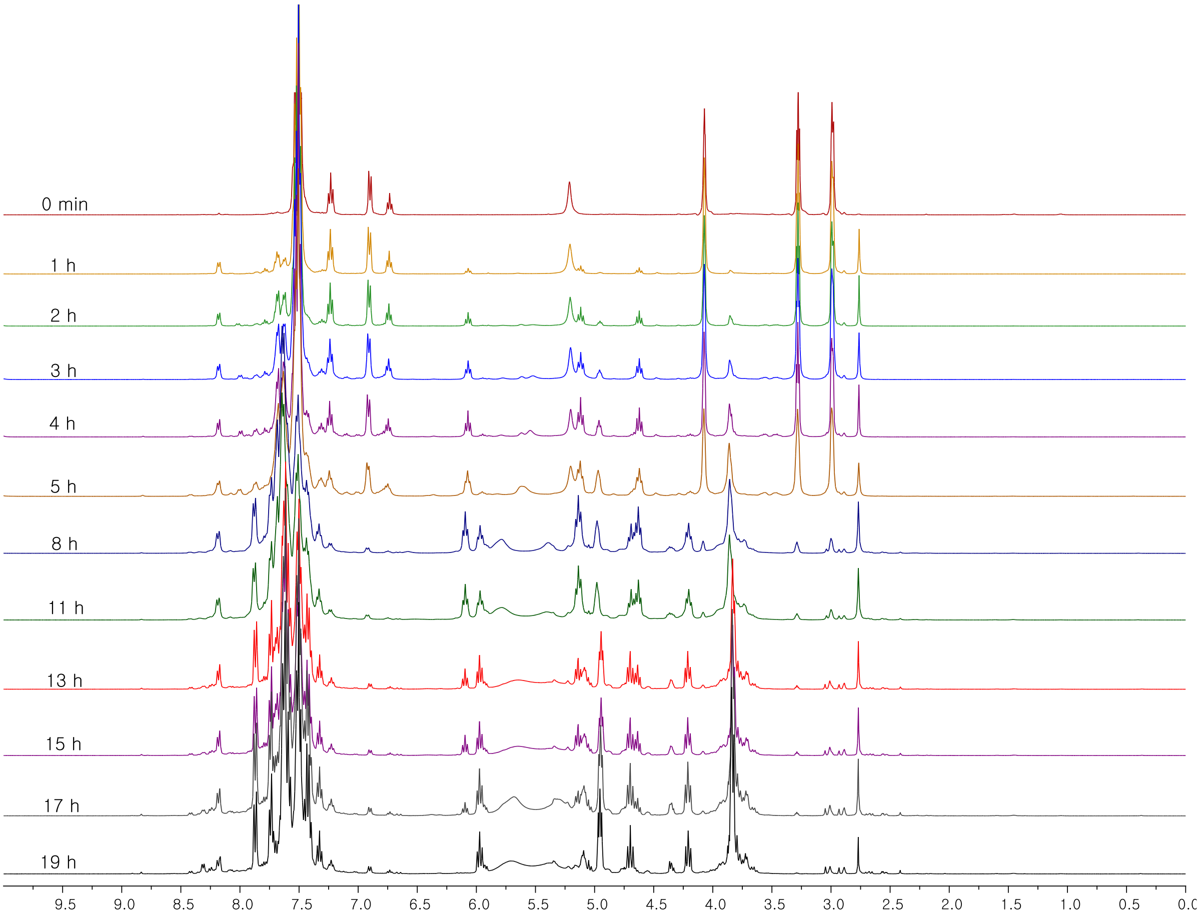
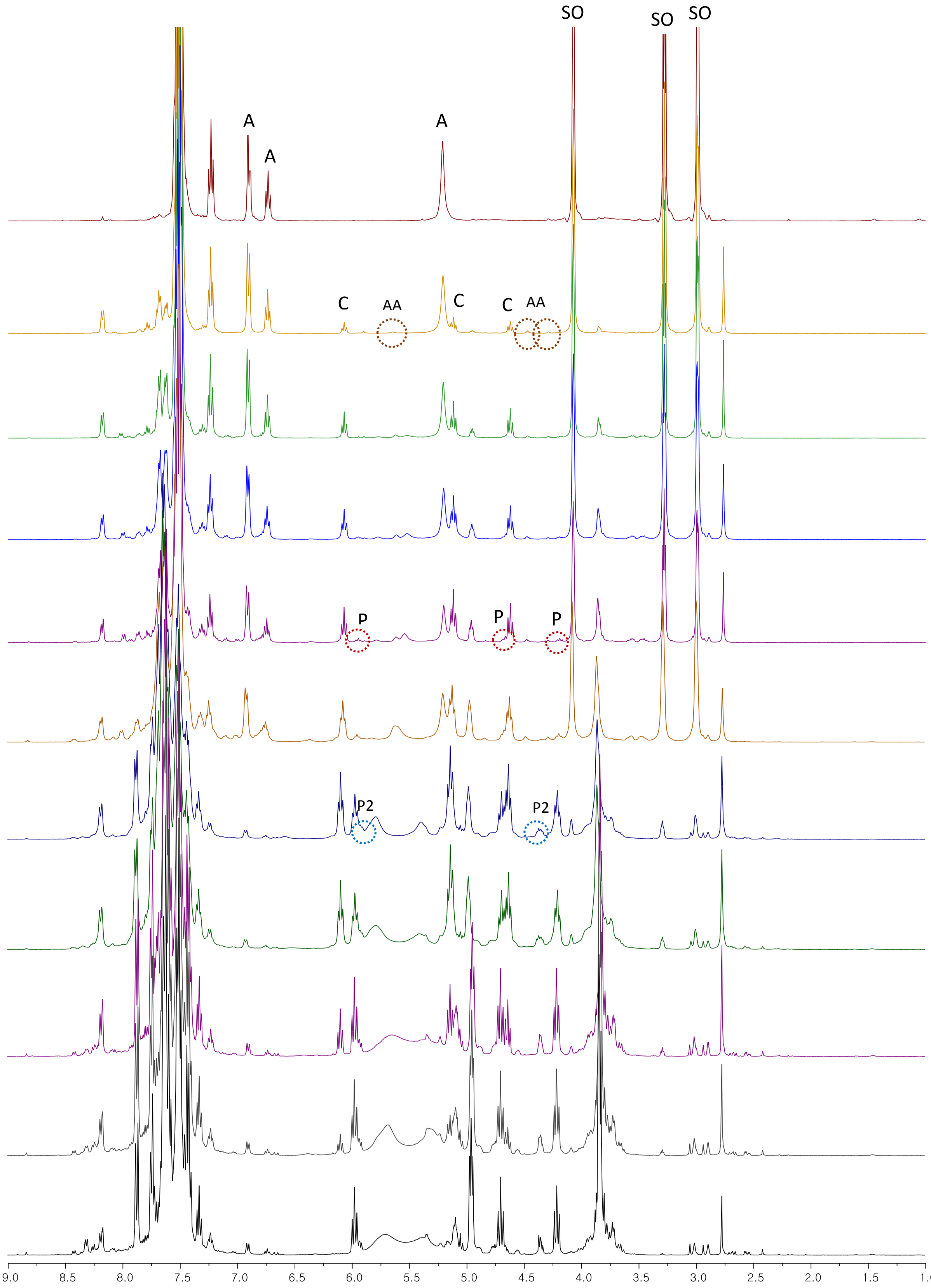


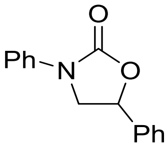
Figure S12 ^{1}H NMR spectra of the expanded reaction profile for the oxazolidione synthesis

A: aniline, SO: styrene oxide, AA: amino alcohol, P: **3aa-A**, P2: **3aa-B**

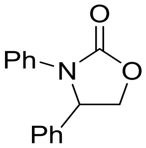


After 1 h, a small portion of styrene carbonate appeared. However, we could hardly see the formation of amino alcohol because a small amount of amino alcohol was generated. Further heating led to generate more styrene carbonate than amino alcohol, suggesting that styrene carbonate was rapidly generated. After 4h, **3aa-A** was detected. The formation of amino alcohol was observed in the time range from 1 h to 5 h. After that, the peaks of amino alcohol were overlapped with other peaks so that we were not able to distinguish the characteristic peaks of amino alcohol. Product **3aa-B** was detected after 8 h of reaction. However, two peaks of **3aa-A** were overlapped: one of the peaks was overlapped with **3aa-A** and the other with styrene carbonate. The amount of cyclic carbonate increased until 13 h of reaction time, then decreased. After 19 h, there is no styrene carbonate left. From this study, we could confirm the formation of phenyl isocyanate and amino alcohol as reaction intermediates. The information obtained from this study was somewhat similar to that obtained from the reaction-monitoring by GC-Mass.

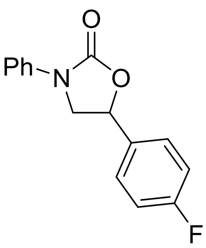
^{1}H NMR, ^{13}C NMR, IR, HRMS, and M.P. data of various 2-oxazolidiones:


3,5-Diphenyloxazolidin-2-one, **3aa-A**

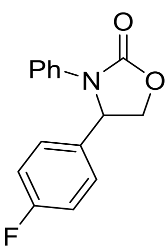
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.54 (d, *J* = 7.9 Hz, 2 H), 7.48 – 7.32 (m, 7 H), 7.13 (t, *J* = 7.4 Hz, 1 H), 5.67 – 5.59 (m, 1 H), 4.37 (t, *J* = 8.8 Hz, 1 H), 3.95 (dd, *J* = 8.7, 7.7 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 154.8, 138.2 (2), 129.2, 129.1, 125.8, 124.3, 118.4, 74.1, 52.8 ppm. **HRMS (EI)** calc. for [$C_{15}H_{13}NO_2$]: 239.0946, found: 239.0948; **IR (neat)**: 1758 cm^{-1} (C=O); **M.P.**: 128 ^{o}C; white solid.


3,4-Diphenyloxazolidin-2-one, **3aa-B**

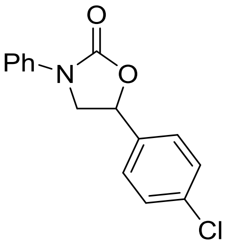
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.36 – 7.27 (m, 2 H), 7.29 – 7.06 (m, 7 H), 6.96 (t, *J* = 7.4 Hz, 1 H), 5.29 (dd, *J* = 8.6, 6.1 Hz, 1 H), 4.65 (td, *J* = 8.7, 2.1 Hz, 1 H), 4.11 – 4.04 (m, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 155.9, 138.2, 137.0, 129.3, 128.9, 128.8, 126.2, 124.6, 120.8, 69.8, 60.6 ppm. **HRMS (EI)** calc. for [$C_{15}H_{13}NO_2$]: 239.0946, found: 239.0944; **IR (neat)**: 1757 cm^{-1} (C=O); **M.P.**: 128 ^{o}C; light yellow solid.


5-(4-Fluorophenyl)-3-phenyloxazolidin-2-one, **3ba-A**

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.53 (d, *J* = 8.4 Hz, 2 H), 7.46 – 7.31 (m, 4 H), 7.18 – 7.04 (m, 3 H), 5.64 – 5.54 (m, 1 H), 4.41 – 4.30 (m, 1 H), 3.96 – 3.86 (m, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 164.3, 161.9, 154.6, 138.1, 133.9, 129.2, 127.8, 127.7, 124.3, 118.4, 116.2, 116.0, 73.6, 52.7 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}FNO_2$]: 257.0852, found: 257.0855; **IR (neat)**: 1759 cm^{-1} (C=O); **M.P.**: 110 ^{o}C; light yellow solid.

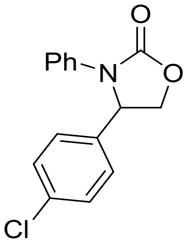

4-(4-Fluorophenyl)-3-phenyloxazolidin-2-one, **3ba-B**

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.34 (d, *J* = 8.4 Hz, 2 H), 7.25 (m, 4 H), 7.10 – 6.96 (m, 3 H), 5.37 (dd, *J* = 8.6, 6.2 Hz, 1 H), 4.75 (t, *J* = 8.7 Hz, 1 H), 4.15 (dd, *J* = 8.6, 6.1 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 164.0, 161.6, 155.8, 136.8, 134.0, 129.0, 128.2, 128.1, 124.9, 121.0, 116.6, 116.6, 116.4, 69.8, 60.1 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}FNO_2$]: 257.0852, found: 257.0852; **IR (neat)**: 1758 cm^{-1} (C=O); **M.P.**: 112 ^{o}C; white solid.



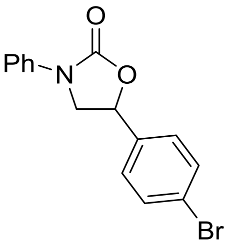
5-(4-Chlorophenyl)-3-phenyloxazolidin-2-one, **3ca-A**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.51 (d, *J* = 8.0 Hz, 2 H), 7.43 – 7.27 (m, 6 H), 7.13 (m, 1 H), 5.57 (t, *J* = 8.1 Hz, 1 H), 4.39 – 4.28 (m, 1 H), 3.92 – 3.82 (m, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 154.5, 138.0, 136.6, 135.0, 129.2, 129.1, 127.1, 124.3, 118.3, 73.3, 52.5 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}ClNO_2$]: 273.0557, found: 273.0554; **IR (neat)**: 1759 cm^{-1} (C=O); **M.P.**: 125 ^{o}C; white- yellowish solid.



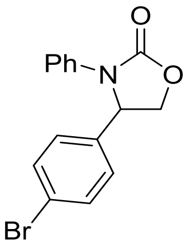
4-(4-Chlorophenyl)-3-phenyloxazolidin-2-one, **3ca-B**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.41 – 7.27 (m, 4 H), 7.24 (m, 4 H), 7.06 (t, *J* = 7.3 Hz, 1 H), 5.37 (dd, *J* = 8.6, 6.1 Hz, 1 H), 4.75 (t, *J* = 8.7 Hz, 1 H), 4.14 (dd, *J* = 8.6, 6.0 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 155.8, 136.8 (2), 134.8, 129.7, 129.1, 127.7, 125.0, 120.9, 69.6, 60.1ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}ClNO_2$]: 273.0557, found: 273.0558; **IR (neat)**: 1758 cm^{-1} (C=O); **M.P.**: 140 ^{o}C; white solid



5-(4-Bromophenyl)-3-phenyloxazolidin-2-one, **3da-A**

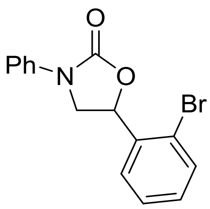
^{1}H NMR (400 MHz, CDCl$_3$) δ 7.53 (m, 4 H), 7.36 (m, 2 H), 7.28 (d, *J* = 8.3 Hz, 2 H), 7.13 (t, *J* = 7.4 Hz, 1 H), 5.57 (t, *J* = 8.0 Hz, 1 H), 4.42 – 4.31 (m, 1 H), 3.91 – 3.86 (m, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 154.5, 138.0, 137.2, 132.3, 129.2, 127.4, 124.4, 123.2, 118.4, 73.4, 52.6 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}BrNO_2$]:317.0051, found: 317.0053; **IR (neat)**: 1759 cm^{-1} (C=O); **M.P.**: 144 ^{o}C; white solid.



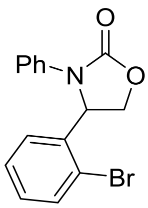
4-(4-Bromophenyl)-3-phenyloxazolidin-2-one, **3da-B**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.40 (d, *J* = 8.3 Hz, 2 H), 7.28 (d, *J* = 8.2 Hz, 2 H), 7.19 (t, *J* = 7.9 Hz, 2 H), 7.10 (d, *J* = 8.3 Hz, 2 H), 7.01 (t, *J* = 7.3 Hz, 1 H), 5.29 (dd, *J* = 8.6, 6.0 Hz, 1 H), 4.69 (t, *J* = 8.7 Hz, 1 H), 4.08 (dd, *J*

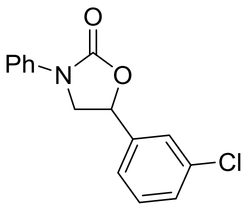
= 8.6, 6.0 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 155.8, 137.4, 136.8, 132.6, 129.1, 128.0, 125.0, 122.9, 120.9, 69.5, 60.2 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}BrNO_2$]:317.0051, found: 317.0053; **IR (neat)**: 1758 cm^{-1} (C=O); **M.P.**: 144 ^{o}C; white solid.


5-(2-Bromophenyl)-3-phenyloxazolidin-2-one, **3ea-A**

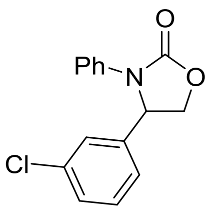
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.59 (d, *J* = 7.9 Hz, 2 H), 7.53 (d, *J* = 7.9 Hz, 2 H), 7.38 (m, 3 H), 7.27 – 7.22 (m, 1 H), 7.13 (t, *J* = 7.4 Hz, 1 H), 5.93 – 5.83 (m, 1 H), 4.60 (t, *J* = 9.0 Hz, 1 H), 3.81 (dd, *J* = 9.0, 6.5 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 154.6, 138.3, 138.0, 133.1, 130.2, 129.2, 128.2, 126.5, 124.4, 120.5, 118.4, 73.0, 52.0 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}BrNO_2$]:317.0051, found: 317.0055; **IR (neat)**: 1760 cm^{-1} (C=O); **M.P.**: 122 ^{o}C; white solid.


4-(2-Bromophenyl)-3-phenyloxazolidin-2-one, **3ea-B**

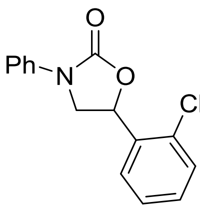
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.44 (d, *J* = 7.7 Hz, 1 H), 7.26 (d, *J* = 8.1 Hz, 2 H), 7.07 (m, 5 H), 6.90 (t, *J* = 7.2 Hz, 1 H), 5.72 – 5.60 (m, 1 H), 4.73 – 4.62 (m, 1 H), 4.03 – 3.91 (m, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 155.6, 137.0, 136.9, 133.4, 130.0, 129.0, 128.3, 127.0, 124.3, 122.0, 119.5, 68.6, 59.2 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}BrNO_2$]:317.0051, found: 317.0052; **IR (neat)**: 1761 cm^{-1} (C=O); **M.P.**: 123 ^{o}C; white solid.


5-(3-Chlorophenyl)-3-phenyloxazolidin-2-one, **3fa-A**

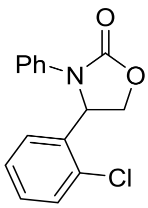
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.52 (d, *J* = 7.9 Hz, 2 H), 7.41 (s, 1 H), 7.40 – 7.26 (m, 5 H), 7.15 (d, *J* = 7.4 Hz, 1 H), 5.60 (t, *J* = 8.1 Hz, 1 H), 4.42 – 4.33 (m, 1 H), 3.94 – 3.89 (m, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 154.4, 140.2, 137.9, 135.0, 130.4, 129.2, 129.1, 125.8, 124.4, 123.7, 118.3, 73.2, 52.5 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}ClNO_2$]: 273.0557, found: 273.0553; **IR (neat)**: 1759 cm^{-1} (C=O); **M.P.**: 100 ^{o}C; light yellow solid.


4-(3-Chlorophenyl)-3-phenyloxazolidin-2-one, **3fa-B**

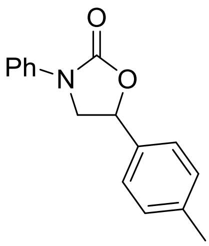
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.36 (d, *J* = 8.1 Hz, 2 H), 7.26 (m, 5 H), 7.20 – 7.14 (m, 1 H), 7.07 (t, *J* = 7.1 Hz, 1 H), 5.35 (dd, *J* = 8.7, 5.8 Hz, 1 H), 4.76 (t, *J* = 8.7 Hz, 1 H), 4.21 – 4.11 (m, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 155.7, 140.5, 136.8, 135.4, 130.9, 129.2, 129.1, 126.6, 125.0, 124.4, 120.8, 69.5, 60.2 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}ClNO_2$]: 273.0557, found: 273.0558; **IR (neat)**: 1761 cm^{-1} (C=O); **M.P.**: 102 ^oC; white solid.


5-(2-Chlorophenyl)-3-phenyloxazolidin-2-one, **3ga-A**

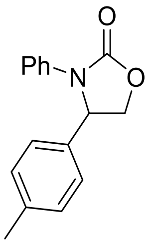
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.61 (d, *J* = 7.3 Hz, 1 H), 7.53 (d, *J* = 8.0 Hz, 2 H), 7.36 (m, 5 H), 7.12 (t, *J* = 7.4 Hz, 1 H), 5.91 (dd, *J* = 8.6, 6.9 Hz, 1 H), 4.61 – 4.51 (m, 1 H), 3.82 (dd, *J* = 8.9, 6.7 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 154.5, 138.0, 136.6, 131.1, 129.9, 129.8, 129.2, 127.6, 126.2, 124.3, 118.4, 71.2, 51.9 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}ClNO_2$]: 273.0557, found: 273.0559; **IR (neat)**: 1760 cm^{-1} (C=O); **M.P.**: 123 ^oC; white- yellowish solid.


4-(2-Chlorophenyl)-3-phenyloxazolidin-2-one, **3ga-B**

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.51 – 7.37 (m, 3 H), 7.32 – 7.17 (m, 5 H), 7.06 (t, *J* = 7.4 Hz, 1 H), 5.88 – 5.80 (m, 1 H), 4.82 (m, 1 H), 4.15 (m, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 155.6, 137.0, 135.6, 132.3, 130.2, 129.8, 129.1, 127.8, 127.0, 124.5, 119.7, 68.6, 57.1ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}ClNO_2$]: 273.0557, found: 273.0559; **IR (neat)**: 1761 cm^{-1} (C=O); **M.P.**: 138 ^oC; white solid.

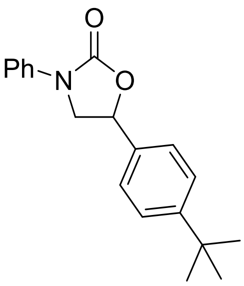

3-Phenyl-5-(p-tolyl)oxazolidin-2-one, **3ha-A**

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.54 (d, *J* = 8.0 Hz, 2 H), 7.37 (t, *J* = 7.9 Hz, 2 H), 7.30 (d, *J* = 8.0 Hz, 2 H), 7.23 (t, *J* = 6.4 Hz, 2 H), 7.13 (t, *J* = 7.3 Hz, 1 H), 5.58 (t, *J* = 8.1 Hz, 1 H), 4.37- 4.29 (m, 1 H), 3.94 (t, *J* = 8.2 Hz, 1 H), 2.36 (s, 3 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 154.9, 139.2, 138.3, 135.1, 129.8, 129.2, 125.9, 124.2, 118.4, 74.2, 52.8, 21.3 ppm. **HRMS (EI)** calc. for [$C_{16}H_{15}NO_2$]: 253.1103, found: 253.1101; **IR (neat)**: 1755 cm^{-1} (C=O); **M.P.**: 118 ^oC; white solid.



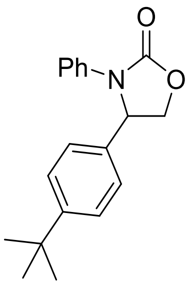
3-Phenyl-4-(p-tolyl)oxazolidin-2-one, **3ha-B**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.38 (d, *J* = 8.0 Hz, 2 H), 7.23 (m, 2 H), 7.15 (m, 4 H), 7.04 (t, *J* = 7.4 Hz, 1 H), 5.34 (dd, *J* = 8.6, 6.1 Hz, 1 H), 4.72 (t, *J* = 8.7 Hz, 1 H), 4.15 (dd, *J* = 8.5, 6.1 Hz, 1 H), 2.29 (s, 3 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 156.0, 138.7, 137.1, 135.2, 130.0, 128.9, 126.2, 124.6, 120.9, 70.0, 60.5, 21.1ppm. **HRMS (EI)** calc. for [$C_{16}H_{15}NO_2$]: 253.1103, found:253.1103 ; **IR (neat)**: 1755 cm^{-1} (C=O); **M.P.**: 120 ºC; white solid.



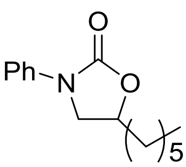
5-(4-(tert-Butyl)phenyl)-3-phenyloxazolidin-2-one, **3ia-A**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.54 (d, *J* = 7.9 Hz, 2 H), 7.44 (d, *J* = 8.4 Hz, 2 H), 7.36 (m, 4 H), 7.14 (d, *J* = 7.4 Hz, 1 H), 5.60 (t, *J* = 8.1 Hz, 1 H), 4.38 – 4.31 (m, 1 H), 4.00 – 3.94 (m, 1 H), 1.32 (s, 9 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 154.9, 152.4, 138.3, 135.1, 129.2, 126.0, 125.6, 124.2, 118.4, 74.1, 52.7, 34.8, 31.4 ppm. **HRMS (EI)** calc. for [$C_{19}H_{21}NO_2$]: 295.1572, found: 295.1569; **IR (neat)**: 1755 cm^{-1} (C=O); **M.P.**: 159 ºC; white solid.



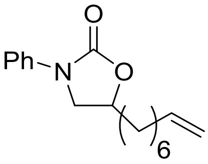
4-(4-(tert-Butyl)phenyl)-3-phenyloxazolidin-2-one, **3ia-B**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.40 (d, *J* = 8.2 Hz, 2 H), 7.34 (d, *J* = 8.2 Hz, 2 H), 7.24 (m, 4 H), 7.05 (t, *J* = 7.3 Hz, 1 H), 5.35 (dd, *J* = 8.4, 6.1 Hz, 1 H), 4.78 – 4.68 (m, 1 H), 4.17 (dd, *J* = 8.4, 6.1 Hz, 1 H), 1.26 (s, 9 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 151.9, 137.3, 135.2, 129.0, 126.4, 126.0, 124.6, 120.9 (2), 70.0, 60.4, 34.7, 31.3 ppm. **HRMS (EI)** calc. for [$C_{19}H_{21}NO_2$]: 295.1572, found: 295.1573; **IR (neat)**: 1755 cm^{-1} (C=O); **M.P.**: 162 ºC; white solid.



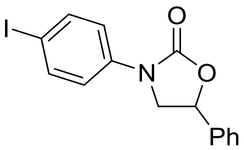
5-Hexyl-3-phenyloxazolidin-2-one, **3ja-A**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.46 (d, *J* = 8.0 Hz, 2 H), 7.29 (t, *J* = 7.7 Hz, 2 H), 7.05 (t, *J* = 7.1 Hz, 1 H), 4.60 – 4.50 (m, 1 H), 4.00 (t, *J* = 8.5 Hz, 1 H), 3.57 (t, *J* = 7.8 Hz, 1 H), 1.78 (d, *J* = 8.0 Hz, 1 H), 1.70 – 1.61 (m, 1 H), 1.48 – 1.41 (m, 1 H), 1.38 – 1.22 (m, 7 H), 0.82 (d, *J* = 6.1 Hz, 3 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 155.0, 138.5, 129.1, 124.0, 118.2, 73.2, 50.6, 35.1, 31.7, 29.0, 24.6, 22.6, 14.1 ppm. **HRMS (EI)** calc. for [$C_{15}H_{21}NO_2$]: 247.1572, found: 247.1575; **IR (neat)**: 1739 cm^{-1} (C=O); **M.P.**: 68 ºC; white solid.



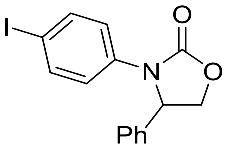
5-(Oct-7-en-1-yl)-3-phenyloxazolidin-2-one, **3ka-A**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.46 (d, *J* = 8.1 Hz, 2 H), 7.29 (t, *J* = 8.0 Hz, 2 H), 7.05 (t, *J* = 7.4 Hz, 1 H), 5.73 (ddt, *J* = 16.9, 10.2, 6.7 Hz, 1 H), 4.96 – 4.84 (m, 2 H), 4.59 – 4.51 (m, 1 H), 3.99 (t, *J* = 8.5 Hz, 1 H), 3.61 – 3.53 (m, 1 H), 1.98 (dd, *J* = 13.4, 6.5 Hz, 2 H), 1.83 – 1.74 (m, 1 H), 1.69 – 1.61 (m, 1 H), 1.47 – 1.26 (m, 8 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 155.0, 139.0, 138.5, 129.1, 124.0, 118.2, 114.4, 73.1, 50.6, 35.1, 33.8, 29.2, 28.9, 28.8, 24.6 ppm. **HRMS (EI)** calc. for [$C_{17}H_{23}NO_2$]: 273.1729, found: 273.1725 ; **IR (neat)**: 1738 cm^{-1} (C=O); **M.P.**: 58 ºC; yellowish solid.



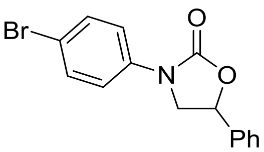
3-(4-Iodophenyl)-5-phenyloxazolidin-2-one, **3ab-A**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.58 (d, *J* = 8.8 Hz, 2 H), 7.43 – 7.28 (m, 5 H), 7.25 (d, *J* = 8.8 Hz, 2 H), 5.55 (t, *J* = 8.1 Hz, 1 H), 4.30 – 4.20 (m, 1 H), 3.87 – 3.81 (m, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 154.5, 138.0, 137.8, 129.3, 129.2, 125.7, 120.1, 87.6, 74.1, 52.5 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}INO_2$]: 364.9913, found: 364.9914; **IR (neat)**: 1758 cm^{-1} (C=O); **M.P.**: 132 ºC; white solid.



3-(4-Iodophenyl)-4-phenyloxazolidin-2-one, **3ab-B**

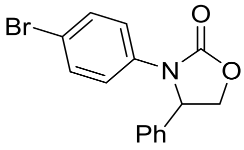
^{1}H NMR (400 MHz, CDCl$_3$) δ 7.53 (d, *J* = 8.6 Hz, 2 H), 7.40 – 7.27 (m, 3 H), 7.25 (d, *J* = 7.6 Hz, 2 H), 7.16 (d, *J* = 8.6 Hz, 2 H), 5.33 (dd, *J* = 8.5, 6.1 Hz, 1 H), 4.76 (t, *J* = 8.7 Hz, 1 H), 4.18 (dd, *J* = 8.4, 6.2 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 155.5, 137.8, 137.7, 136.8, 129.4, 129.0, 126.1, 122.3, 88.3, 69.7, 60.3ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}INO_2$]: 364.9913, found: 364.9917; **IR (neat)**: 1758 cm^{-1} (C=O); **M.P.**: 132 ºC; white solid.



3-(4-Bromophenyl)-5-phenyloxazolidin-2-one, **3ac-A**:

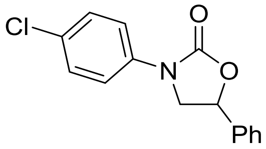
^{1}H NMR (400 MHz, CDCl$_3$) δ 7.45 – 7.26 (m, 9 H), 5.54 (t, *J* = 8.1 Hz, 1 H), 4.30 – 4.20 (m, 1 H), 3.83 (t, *J* =

8.2 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 154.5, 137.8, 137.3, 132.1, 129.3, 129.1, 125.7, 119.8, 117.0, 74.1, 52.5 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}BrNO_2$]: 317.0051, found: 317.0051; **IR (neat)**: 1758 cm^{-1} (C=O); **M.P.**:118 ^{o}C; white solid.



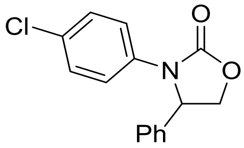
3-(4-Bromophenyl)-4-phenyloxazolidin-2-one, **3ac-B**:

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.39 – 7.29 (m, 5 H), 7.30 – 7.23 (m, 4 H), 5.34 (dd, *J* = 8.7, 6.1 Hz, 1 H), 4.76 (t, *J* = 8.7 Hz, 1 H), 4.18 (dd, *J* = 8.6, 6.1 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 155.6, 137.6, 136.1, 131.8, 129.4, 129.0, 126.1, 122.1, 117.5, 69.7, 60.4 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}BrNO_2$]: 317.0051, found: 317.0049; **IR (neat)**: 1759 cm^{-1} (C=O); **M.P.**: 136 ^{o}C; white solid.



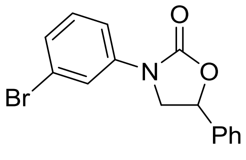
3-(4-Chlorophenyl)-5-phenyloxazolidin-2-one, **3ad-A**

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.48 (d, *J* = 8.9 Hz, 2 H), 7.39 (d, *J* = 9.1 Hz, 5 H), 7.30 (d, *J* = 8.9 Hz, 2 H), 5.61 (t, *J* = 8.1 Hz, 1 H), 4.37 – 4.27 (m, 1 H), 3.90 (t, *J* = 8.2 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 154.5, 137.8, 136.7, 129.3, 129.0 (2), 125.6, 119.3, 74.0, 52.5 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}ClNO_2$]:273.0557 found: 273.0553; **IR (neat)**: 1758 cm^{-1} (C=O); **M.P.**: 126 ^{o}C; white- yellowish solid.



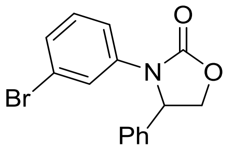
3-(4-Chlorophenyl)-4-phenyloxazolidin-2-one, **3ad-B**

^{1}H NMR (400 MHz, $CDCl_3$) δ 7.43 – 7.29 (m, 5 H), 7.26 (d, *J* = 6.8 Hz, 2 H), 7.19 (d, *J* = 8.9 Hz, 2 H), 5.34 (dd, *J* = 8.7, 6.1 Hz, 1 H), 4.76 (t, *J* = 8.7 Hz, 1 H), 4.18 (dd, *J* = 8.6, 6.1 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 155.6, 137.7, 135.5, 129.8, 129.4, 128.9 (2), 126.1, 121.8, 69.7, 60.5 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}ClNO_2$]:273.0557 found: 273.0559; **IR (neat)**: 1758 cm^{-1} (C=O); **M.P.**: 126 ^{o}C; white-yellowish solid.

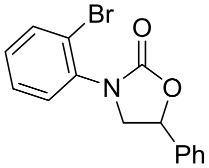


3-(3-Bromophenyl)-5-phenyloxazolidin-2-one, **3ae-A**

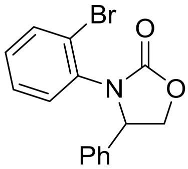
^{1}H NMR (400 MHz, $CDCl_3$) δ 7.64 (s, 1 H), 7.39 (d, *J* = 7.7 Hz, 1 H), 7.35 – 7.26 (m, 5 H), 7.19 – 7.06 (m, 2 H), 5.52 (t, *J* = 8.1 Hz, 1 H), 4.29 – 4.18 (m, 1 H), 3.80 (t, *J* = 8.2 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, $CDCl_3$)** δ 154.3, 139.4, 137.7, 130.4, 129.2, 129.1, 127.0, 125.7, 122.8, 121.0, 116.6, 74.1, 52.4 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}BrNO_2$]:317.0051, found: 317.0050; **IR (neat)**: 1755 cm^{-1} (C=O); **M.P.**: 110 ^{o}C; white solid.

 3-(3-Bromophenyl)-4-phenyloxazolidin-2-one, **3ae-B**

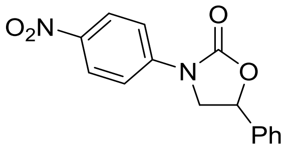
^{1}H NMR (400 MHz, CDCl$_3$) δ 7.57 (s, 1 H), 7.25 – 7.09 (m, 6 H), 7.06 – 6.99 (m, 1 H), 6.94 (t, *J* = 8.1 Hz, 1 H), 5.22 (dd, *J* = 8.6, 5.9 Hz, 1 H), 4.63 (t, *J* = 8.7 Hz, 1 H), 4.08 – 4.02 (m, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 155.5, 138.4, 137.7, 130.1, 129.5, 129.0, 127.6, 126.2, 123.6, 122.6, 118.9, 69.9, 60.4 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}BrNO_2$]:317.0051, found: 317.0053; **IR (neat)**: 1756 cm^{-1} (C=O); **M.P.**: 119 ^{o}C; white solid.

 3-(2-Bromophenyl)-5-phenyloxazolidin-2-one, **3af-A**

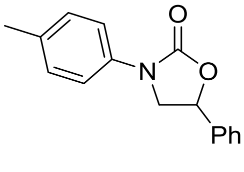
^{1}H NMR (400 MHz, CDCl$_3$) δ 7.58 (d, *J* = 8.0 Hz, 1 H), 7.45 – 7.28 (m, 7 H), 7.19 – 7.13 (m, 1 H), 5.64 (t, *J* = 8.1 Hz, 1 H), 4.30 – 4.20 (m, 1 H), 3.85 (t, *J* = 8.1 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 156.2, 138.2, 136.2, 133.9, 130.0, 129.8, 129.1, 129.0, 128.8, 125.9, 122.6, 75.5, 54.6ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}BrNO_2$]:317.0051, found: 317.0048; **IR (neat)**: 1761 cm^{-1} (C=O); **M.P.**: 121 ^{o}C; white solid.

 3-(2-Bromophenyl)-4-phenyloxazolidin-2-one, **3af-B**

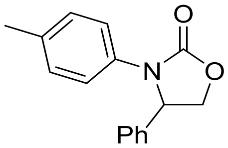
^{1}H NMR (400 MHz, CDCl$_3$) δ 7.57 (d, *J* = 7.8 Hz, 1 H), 7.31 (m, 5 H), 7.11 (m, 2 H), 6.98 (d, *J* = 7.5 Hz, 1 H), 5.37 (dd, *J* = 8.5, 6.8 Hz, 1 H), 4.92 - 4.78 (m, 1 H), 4.42 (dd, *J* = 8.6, 6.7 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 156.4, 137.5, 135.0, 133.7, 129.7, 129.2 (2), 128.3, 127.5, 125.9, 122.8, 70.4, 62.0 ppm. . **HRMS (EI)** calc. for [$C_{15}H_{12}BrNO_2$]:317.0051, found: 317.0049; **IR (neat)**: 1760 cm^{-1} (C=O); **M.P.**: 119 ^{o}C; white solid.

 3-(4-Nitrophenyl)-5-phenyloxazolidin-2-one, **3ag-A**

^{1}H NMR (400 MHz, CDCl$_3$) δ 8.23 (d, *J* = 7.5 Hz, 2 H), 7.72 (d, *J* = 7.6 Hz, 2 H), 7.52 – 7.34 (m, 5 H), 5.74 – 5.65 (m, 1 H), 4.45 (t, *J* = 8.9 Hz, 1 H), 4.05 – 3.97 (m, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 154.1, 143.7, 143.5, 137.3, 129.6, 129.3, 125.7, 125.1, 117.6, 74.4, 52.5 ppm. **HRMS (EI)** calc. for [$C_{15}H_{12}N_2O_4$]: 284.0797, found: 284.0795; **IR (neat)**: 1765 cm^{-1} (C=O); **M.P.**: 165 ^{o}C; light yellow solid.

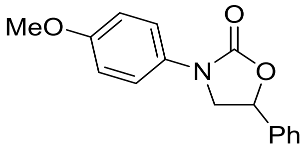
 5-Phenyl-3-(p-tolyl)oxazolidin-2-one, **3ah-A**

¹H NMR (400 MHz, CDCl₃) δ 7.40 – 7.26 (m, 7 H), 7.09 (d, *J* = 8.3 Hz, 2 H), 5.52 (dd, *J* = 8.6, 7.6 Hz, 1 H), 4.26 (t, *J* = 8.8 Hz, 1 H), 3.84 (dd, *J* = 8.9, 7.6 Hz, 1 H), 2.24 (s, 3 H) ppm. **¹³C NMR (100 MHz, CDCl₃)** δ 154.8, 138.3, 135.7, 133.9, 129.7, 129.1 (2), 125.7, 118.5, 74.1, 52.9, 20.8 ppm. **HRMS (EI)** calc. for [$C_{16}H_{15}NO_2$]: 253.1103, found: 253.1107; **IR (neat)**: 1754 cm^{-1} (C=O); **M.P.**: 103 ^oC; white solid.



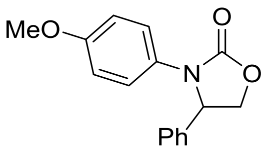
4-Phenyl-3-(p-tolyl)oxazolidin-2-one, **3ah-B**

¹H NMR (400 MHz, CDCl₃) δ 7.38 – 7.21 (m, 7 H), 7.03 (d, *J* = 8.3 Hz, 2 H), 5.34 (dd, *J* = 8.6, 6.2 Hz, 1 H), 4.72 (t, *J* = 8.7 Hz, 1 H), 4.14 (dd, *J* = 8.5, 6.2 Hz, 1 H), 2.22 (s, 3 H) ppm. **¹³C NMR (100 MHz, CDCl₃)** δ 156.1, 138.3, 134.4 (2), 129.4, 129.3, 128.7, 126.3, 121.0, 69.7, 60.7, 20.7 ppm. **HRMS (EI)** calc. for [$C_{16}H_{15}NO_2$]: 253.1103, found: 253.1101; **IR (neat)**: 1755 cm^{-1} (C=O); **M.P.**: 103 ^oC; yellow solid.



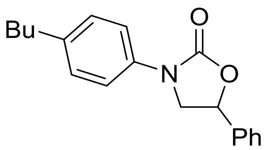
3-(4-Methoxyphenyl)-5-phenyloxazolidin-2-one, **3ai-A**

¹H NMR (400 MHz, CDCl₃) δ 7.48 – 7.31 (m, 7 H), 6.89 (d, *J* = 8.9 Hz, 2 H), 5.58 (t, *J* = 8.1 Hz, 1 H), 4.36 – 4.25(m, 1 H), 3.88 (t, *J* = 8.2 Hz, 1 H), 3.77 (s, 3 H) ppm. **¹³C NMR (100 MHz, CDCl₃)** δ 156.4, 154.9, 138.2, 131.3, 129.0, 128.9, 125.6, 120.2, 114.2, 73.9, 55.4, 53.1 ppm. **HRMS (EI)** calc. for [$C_{16}H_{15}NO_3$]: 269.1052, found: 269.1055; **IR (neat)**: 1754 cm^{-1} (C=O); **M.P.**: 114 ^oC; white solid.



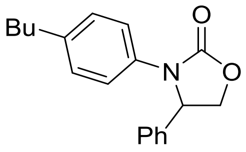
3-(4-Methoxyphenyl)-4-phenyloxazolidin-2-one, **3ai-B**

¹H NMR (400 MHz, CDCl₃) δ 7.31 (m, 5 H), 7.23 (d, *J* = 9.0 Hz, 2 H), 6.76 (d, *J* = 8.9 Hz, 2 H), 5.34 – 5.25 (m, 1 H), 4.74 (t, *J* = 8.7 Hz, 1 H), 4.22 – 4.15 (m, 1 H), 3.70 (s, 3 H) ppm. **¹³C NMR (100 MHz, CDCl₃)** δ 157.0, 156.4, 138.3, 130.0, 129.4, 128.9, 126.6, 123.4, 114.3, 69.8, 61.4, 55.4 ppm. **HRMS (EI)** calc. for [$C_{16}H_{15}NO_3$]: 269.1052, found: 269.1052; **IR (neat)**: 1754 cm^{-1} (C=O); **M.P.**: 109 ^oC; light yellow solid.

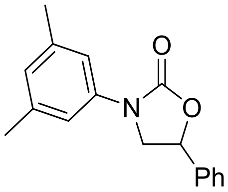


3-(4-Butylphenyl)-5-phenyloxazolidin-2-one, **3aj -A**

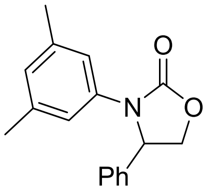
¹H NMR (400 MHz, CDCl₃) δ 7.45 – 7.24 (m, 7 H), 7.10 (d, *J* = 8.6 Hz, 2 H), 5.52 (t, *J* = 8.1 Hz, 1 H), 4.30 – 4.22 (m, 1 H), 3.88 – 3.80 (m, 1 H), 2.54 – 2.47 (m, 2 H), 1.49 (m, 2 H), 1.26 (m, 2 H), 0.84 (t, *J* = 7.3 Hz, 3 H) ppm. **¹³C NMR (100 MHz, CDCl₃)** δ 154.9, 139.0, 138.3, 135.8, 129.1, 129.0, 125.7, 118.4, 74.1, 52.9, 35.0, 33.7, 22.3, 14.0 ppm. **HRMS (EI)** calc. for [$C_{19}H_{21}NO_2$]: 295.1572, found: 295.1569; **IR (neat)**: 1755 cm^{-1} (C=O); **M.P.**: 100 ^oC; white solid.


3-(4-Butylphenyl)-4-phenyloxazolidin-2-one, **3aj –B**

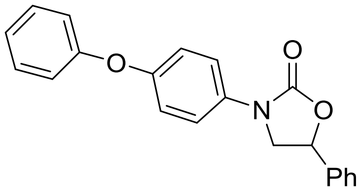
^{1}H NMR (400 MHz, CDCl$_3$) δ 7.42 – 7.19 (m, 7 H), 7.04 (d, *J* = 8.2 Hz, 2 H), 5.34 (dd, *J* = 8.3, 6.3 Hz, 1 H), 4.74 (t, *J* = 8.7 Hz, 1 H), 4.17 (dd, *J* = 8.2, 6.3 Hz, 1 H), 2.49 (t, *J* = 7.7 Hz, 2 H), 1.49 (m, 2 H), 1.28 (m, 2 H), 0.87 (t, *J* = 7.3 Hz, 3 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 156.2, 139.5, 138.5, 134.7, 129.4, 128.9, 128.8, 126.4, 121.0, 69.9, 60.9, 35.0, 33.5, 22.4, 14.0 ppm. **HRMS (EI)** calc. for [$C_{19}H_{21}NO_2$]: 295.1572, found: 295.1576; **IR (neat)**: 1755 cm^{-1} (C=O); **M.P.**: 117 ºC; light yellow solid.


3-(3,5-Dimethylphenyl)-5-phenyloxazolidin-2-one, **3ak-A**

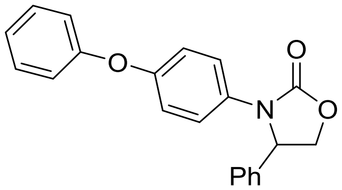
^{1}H NMR (400 MHz, CDCl$_3$) δ 7.33 (m, 5 H), 7.09 (s, 2 H), 6.71 (s, 1 H), 5.51 (t, *J* = 8.0 Hz, 1 H), 4.31 – 4.21 (m, 1 H), 3.84 (t, *J* = 8.2 Hz, 1 H), 2.23 (s, 6 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 154.8, 138.9, 138.3, 138.1, 129.1 (2), 126.0, 125.7, 116.3, 74.0, 53.0, 21.6 ppm. **HRMS (EI)** calc. for [$C_{17}H_{17}NO_2$]: 267.1259, found: 267.1260; **IR (neat)**: 1755 cm^{-1} (C=O); **M.P.**: 108 ºC; light yellow solid.


3-(3,5-Dimethylphenyl)-4-phenyloxazolidin-2-one, **3ak-B**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.32 (m, 5 H), 6.98 (s, 2 H), 6.69 (s, 1 H), 5.34 (dd, *J* = 8.7, 6.0 Hz, 1 H), 4.76 – 4.69 (m, 1 H), 4.16 (dd, *J* = 8.6, 6.0 Hz, 1 H), 2.20 (s, 6 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 156.1, 138.6, 136.9, 129.4, 129.3, 128.8, 126.8, 126.4, 119.1, 69.9, 60.9, 21.5 ppm. **HRMS (EI)** calc. for [$C_{17}H_{17}NO_2$]: 267.1259, found: 267.1260; **IR (neat)**: 1759 cm^{-1} (C=O); **M.P.**: 109 ºC; light yellow solid.

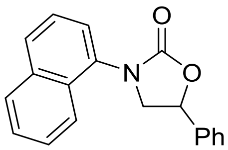

3-(4-Phenoxyphenyl)-5-phenyloxazolidin-2-one, **3al-A**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.50 (d, *J* = 9.0 Hz, 2 H), 7.47 – 7.36 (m, 5 H), 7.32 (t, *J* = 7.9 Hz, 2 H), 7.09 (d, *J* = 7.4 Hz, 1 H), 7.03 (d, *J* = 9.0 Hz, 2 H), 6.97 (d, *J* = 7.7 Hz, 2 H), 5.62 (t, *J* = 8.1 Hz, 1 H), 4.41 – 4.31 (m, 1 H), 3.96 – 3.91 (m, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 157.4, 154.9, 153.6, 138.1, 133.7, 129.8, 129.2 129.1, 125.7, 123.3, 120.2, 119.8, 118.5, 74.1, 53.1 ppm. **HRMS (EI)** calc. for [$C_{21}H_{17}NO_3$]: 331.1208, found: 331.1206; **IR (neat)**: 1754 cm^{-1} (C=O); **M.P.**: 118 ºC; white solid.



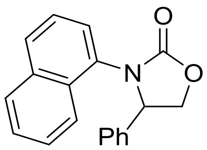
3-(4-Phenoxyphenyl)-4-phenyloxazolidin-2-one, **3al-B**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.39 – 7.26 (m, 9 H), 7.06 (t, *J* = 7.4 Hz, 1 H), 6.92 (m, 2 H), 6.88 (m, 2 H), 5.32 (dd, *J* = 8.7, 6.3 Hz, 1 H), 4.77 (t, *J* = 8.7 Hz, 1 H), 4.20 (dd, *J* = 8.6, 6.2 Hz, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 157.0, 156.2, 154.3, 138.2, 132.3, 129.8, 129.5, 129.0, 126.5, 123.5, 123.0, 119.2, 118.9, 69.9, 61.2 ppm. **HRMS (EI)** calc. for [$C_{21}H_{17}NO_3$]: 331.1208, found: 331.1206; **IR (neat)**: 1754 cm^{-1} (C=O); **M.P.**: 130 ^{o}C; light yellow solid.



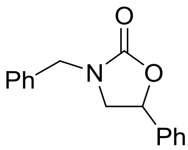
3-(Naphthalen-1-yl)-5-phenyloxazolidin-2-one, **3am-A**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.93 – 7.81 (m, 3 H), 7.57 – 7.40 (m, 9 H), 5.83 (t, *J* = 8.0 Hz, 1 H), 4.46 – 4.38 (m, 1 H), 4.02 – 3.96 (m, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 156.9, 138.4, 134.7, 133.8, 129.9, 129.1, 129.0, 128.8, 128.7, 127.1, 126.6, 125.6 (1), 124.6, 122.3, 75.2, 56.4 ppm. **HRMS (EI)** calc. for [$C_{19}H_{15}NO_2$]: 289.1103, found: 289.1100; **IR (neat)**: 1758 cm^{-1} (C=O); **M.P.**: 150 ^{o}C; yellowish solid.



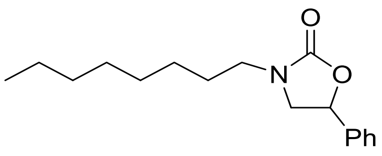
3-(Naphthalen-1-yl)-4-phenyloxazolidin-2-one, **3am-B**

^{1}H NMR (400 MHz, CDCl$_3$) δ 7.97 (d, *J* = 8.4 Hz, 1 H), 7.82 (d, *J* = 8.1 Hz, 1 H), 7.72 (d, *J* = 8.3 Hz, 1 H), 7.57 (t, *J* = 7.6 Hz, 1 H), 7.48 (d, *J* = 7.2 Hz, 1 H), 7.30 – 7.22 (m, 6 H), 7.13 (s, 1 H), 5.38 (s, 1 H), 5.01 – 4.92 (m, 1 H), 4.55 – 4.49 (m, 1 H) ppm **^{13}C NMR (100 MHz, CDCl$_3$)** δ 157.2), 134.6, 130.1, 129.1 (2), 128.7 (2), 128.6, 127.3, 126.9, 126.7, 126.4, 126.3, 125.3, 122.5, 70.3, 63.5 ppm. **HRMS (EI)** calc. for [$C_{19}H_{15}NO_2$]: 289.1103, found: 289.1101; **IR (neat)**: 1759 cm^{-1} (C=O); **M.P.**: 148 ^{o}C; yellow solid.



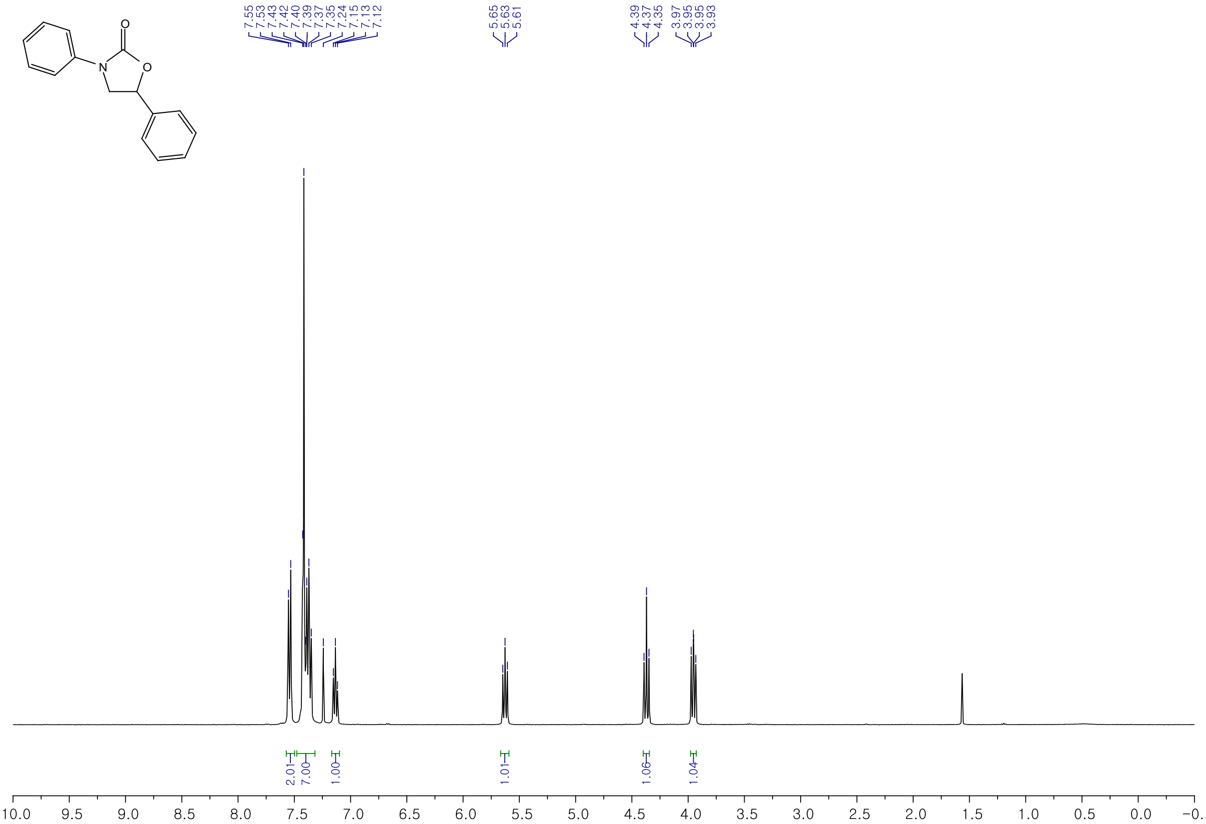
3-Benzyl-5-phenyloxazolidin-2-one, **3an-A**

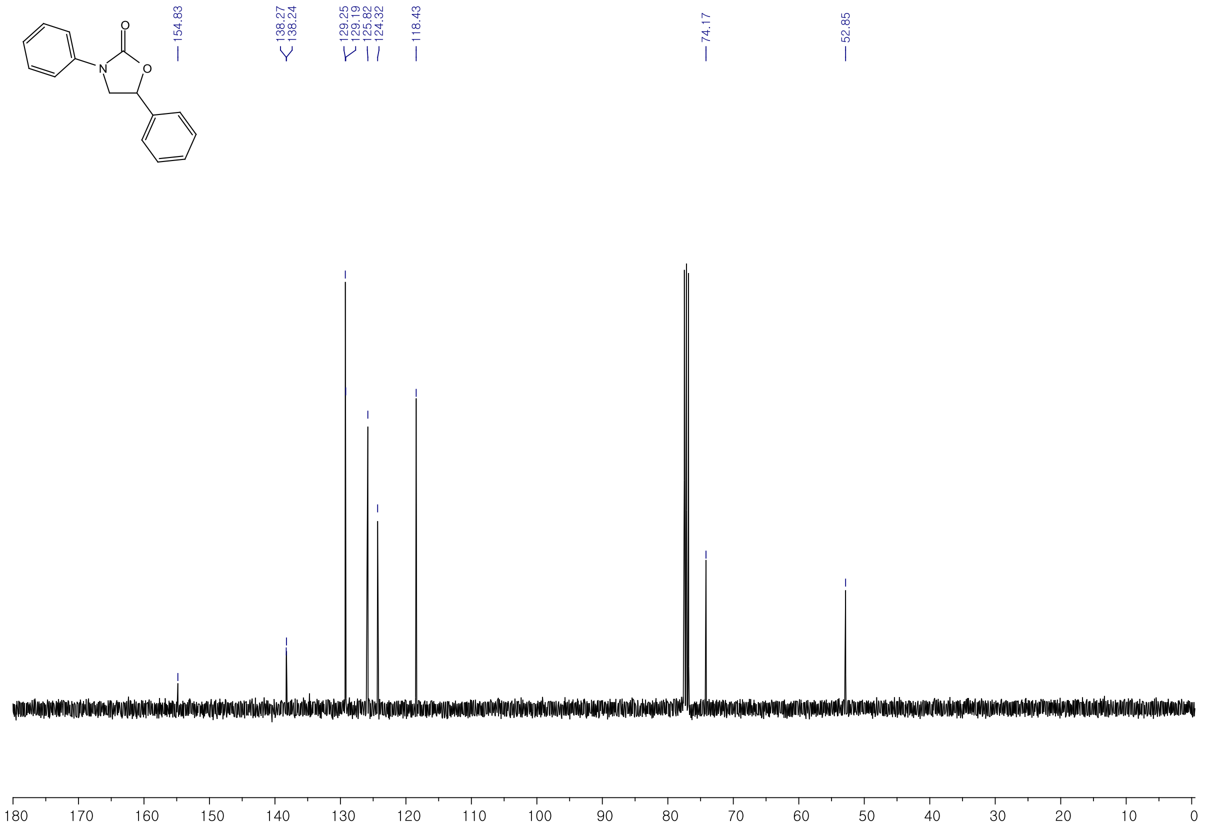
^{1}H NMR (400 MHz, CDCl$_3$) δ 7.44 – 7.22 (m, 10 H), 5.45 (t, *J* = 8.1 Hz, 1 H), 4.54 (d, *J* = 14.8 Hz, 1 H), 4.39 (d, *J* = 14.8 Hz, 1 H), 3.75 (m, 1 H), 3.32 – 3.26 (m, 1 H) ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 158.0, 138.7, 135.7, 128.9(2), 128.2, 128.1, 125.6, 74.6, 51.6, 48.5 ppm. **HRMS (EI)** calc. for [$C_{16}H_{15}NO_2$]: 253.1103, found: 253.1103; **IR (neat)**: 1753 cm^{-1} (C=O); **M.P.**: 80 ^{o}C; white solid.

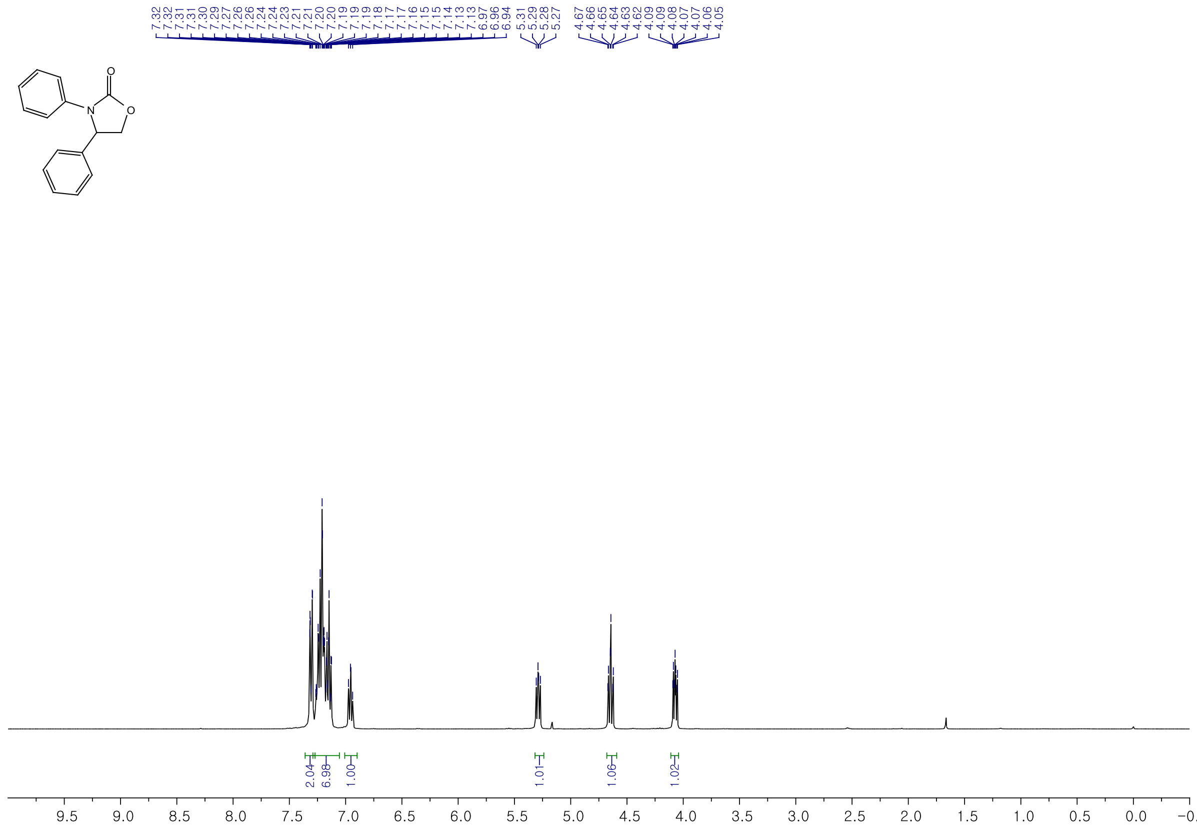
 3-Octyl-5-phenyloxazolidin-2-one, **3ao -A**

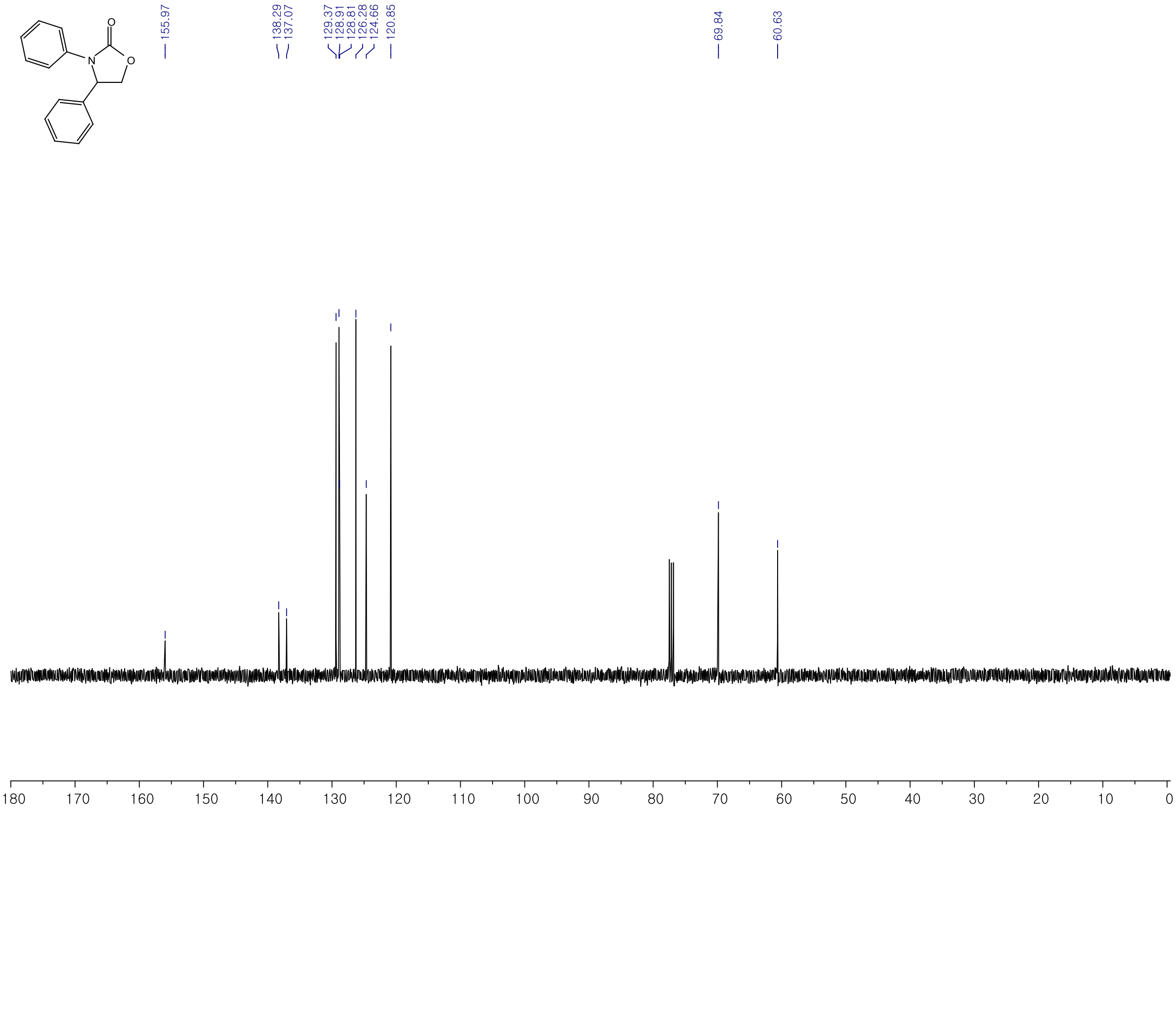
^{1}H NMR (400 MHz, CDCl$_3$) δ 7.49 – 7.25 (m, 5 H), 5.46 (t, *J* = 8.1 Hz, 1 H), 3.92 – 3.86 (m, 1 H), 3.43 – 3.36 (m, 1 H), 3.35 – 3.21 (m, 2 H), 1.56 – 1.44 (m, 2 H), 1.37 – 1.12 (m, 10 H), 0.86 (t, *J* = 6.7 Hz, 3 H)ppm. **^{13}C NMR (100 MHz, CDCl$_3$)** δ 158.0, 139.0, 129.0, 128.8, 125.6, 74.4, 52.3, 44.3, 31.8, 29.3(2), 27.5, 26.7, 22.7, 14.2 ppm. **HRMS (EI)** calc. for [$C_{17}H_{25}NO_2$]: 275.1885, found: 275.1887; **IR (neat)**: 1750 cm^{-1} (C=O); **M.P.**: 95 ^{o}C; yellow solid.

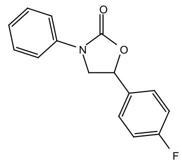
V. NMR Spectra

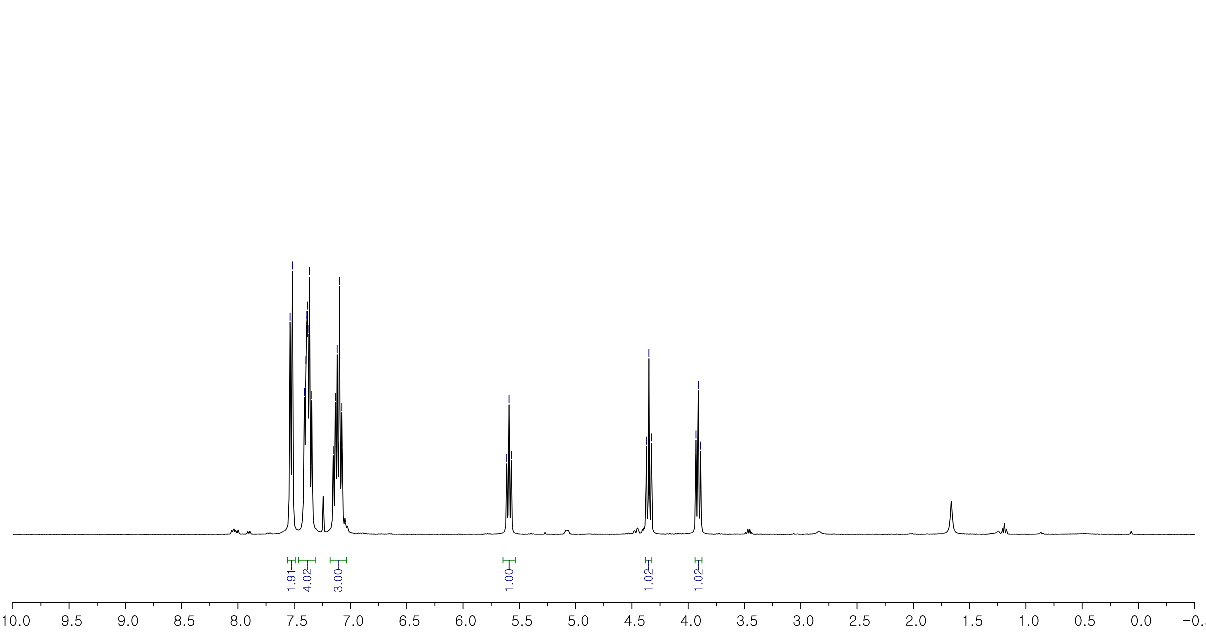





7.32 7.32 7.31 7.30 7.29 7.27 7.26 7.24 7.24 7.23 7.21 7.20 7.20 7.19 7.19 7.18 7.17 7.17 7.16 7.15 7.15 7.14 7.13 7.13 6.97 6.96 6.94
5.31 5.29 5.28 5.27
4.67 4.66 4.65 4.64 4.63 4.62
4.09 4.09 4.08 4.07 4.07 4.06 4.05
O
N
O
2.04 6.98 1.00 1.01 1.06 1.02
9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0


155.97
138.29 137.07
129.37 128.91 128.81 126.28 124.66 120.85
69.84
60.63
O
N
O
180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0





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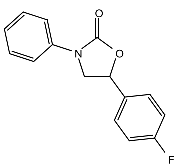

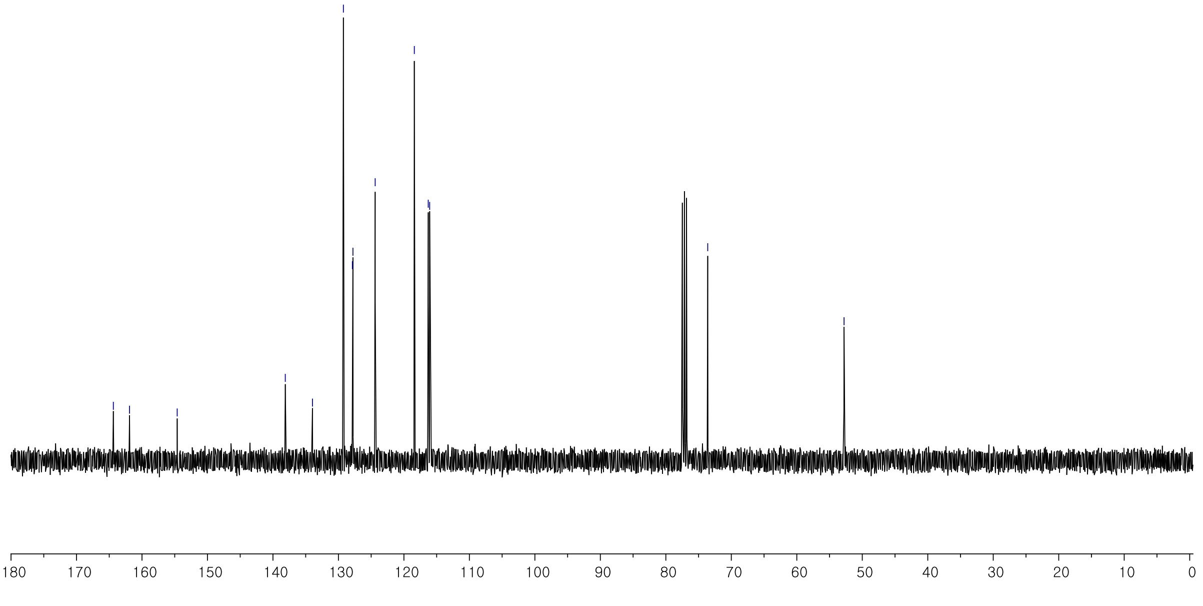

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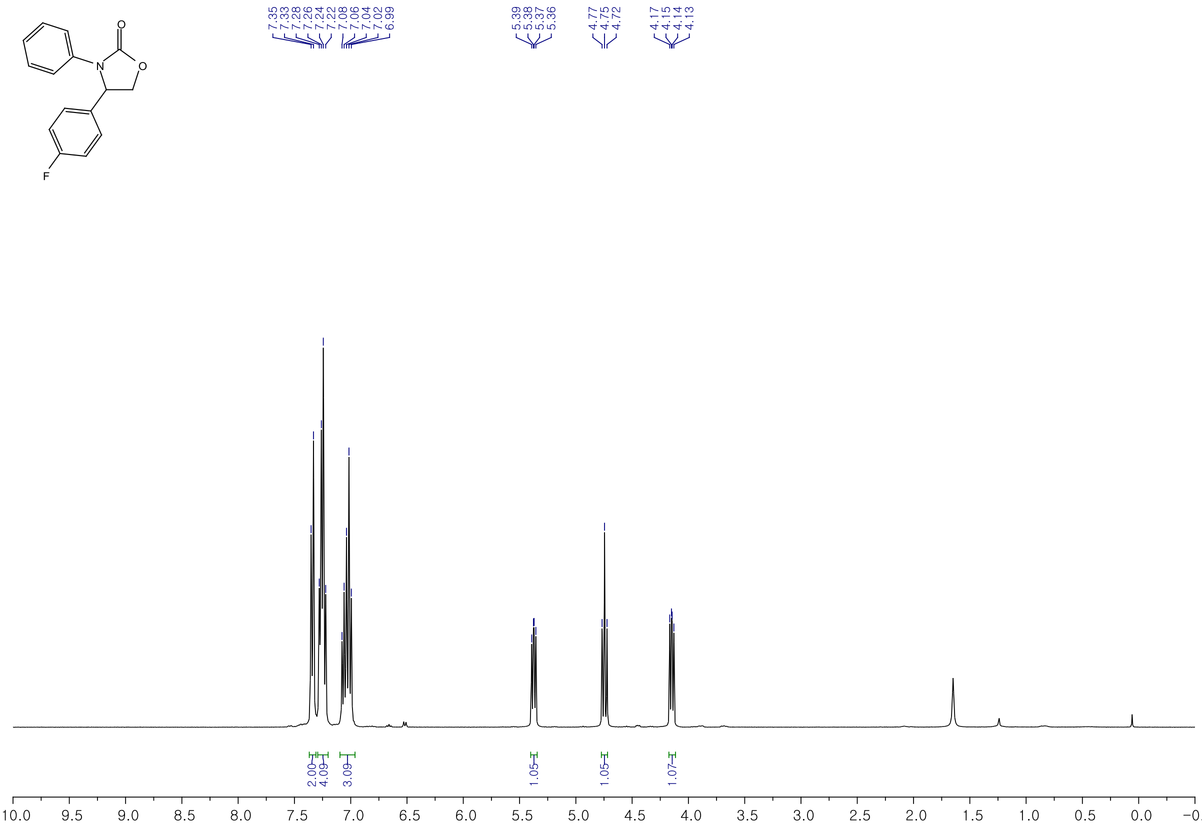

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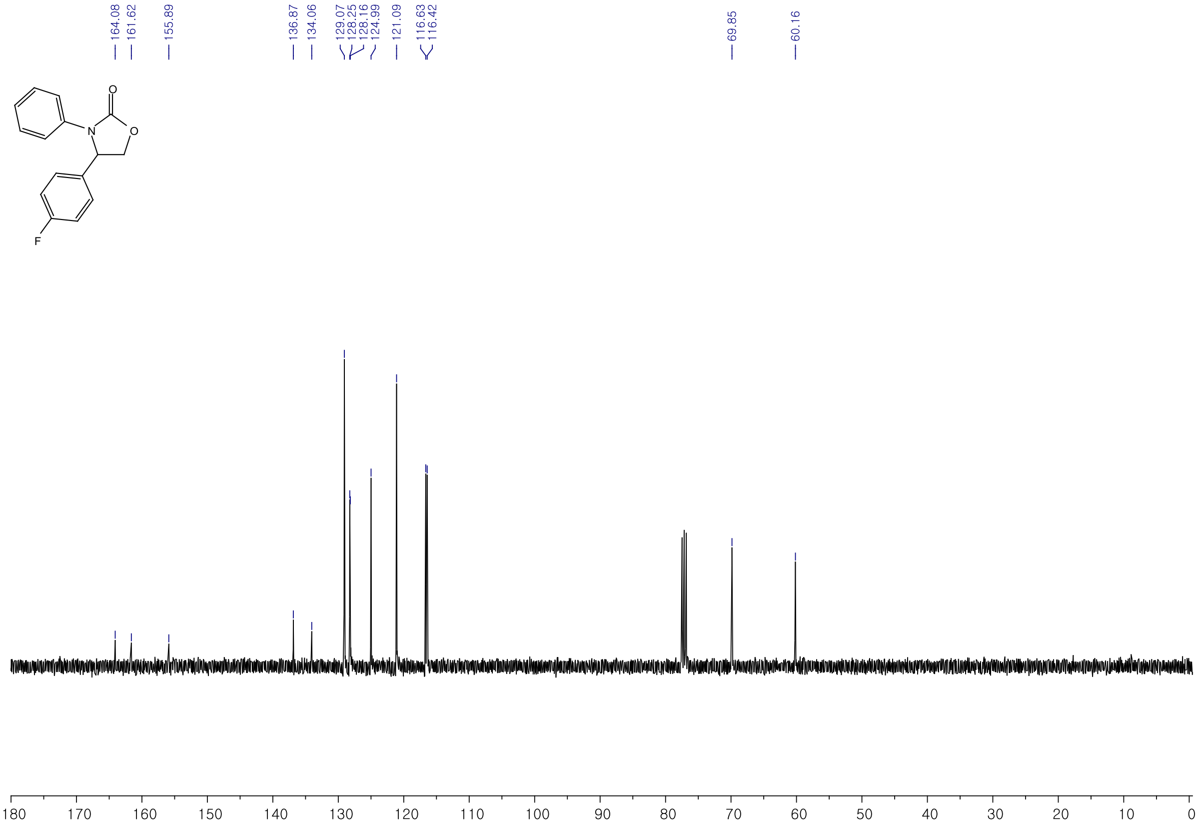

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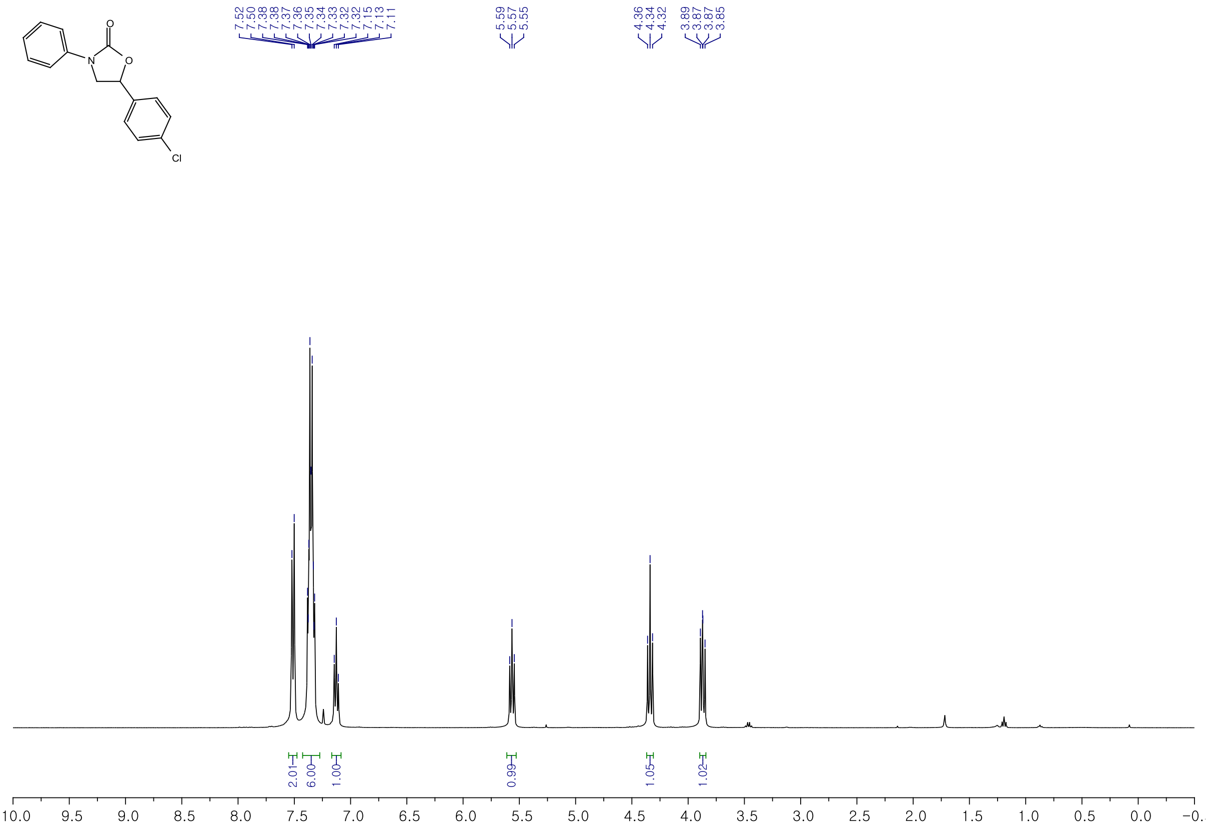

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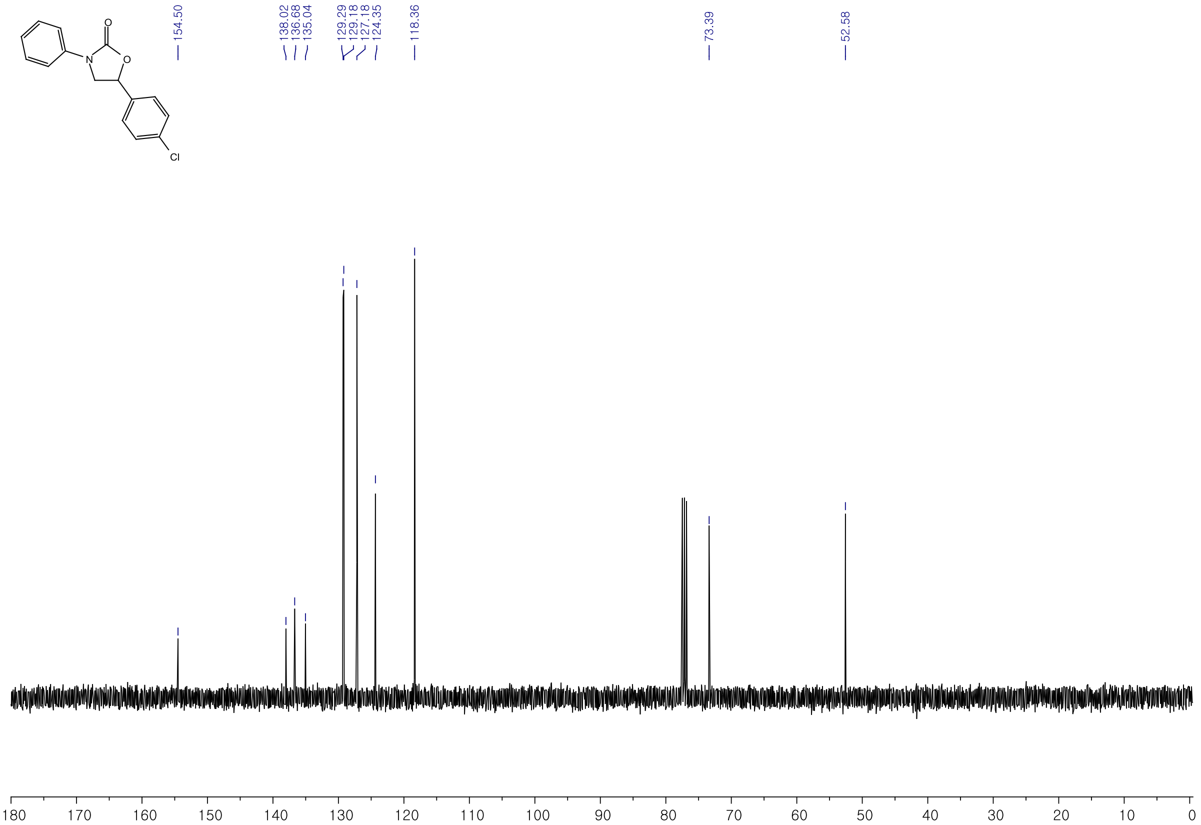

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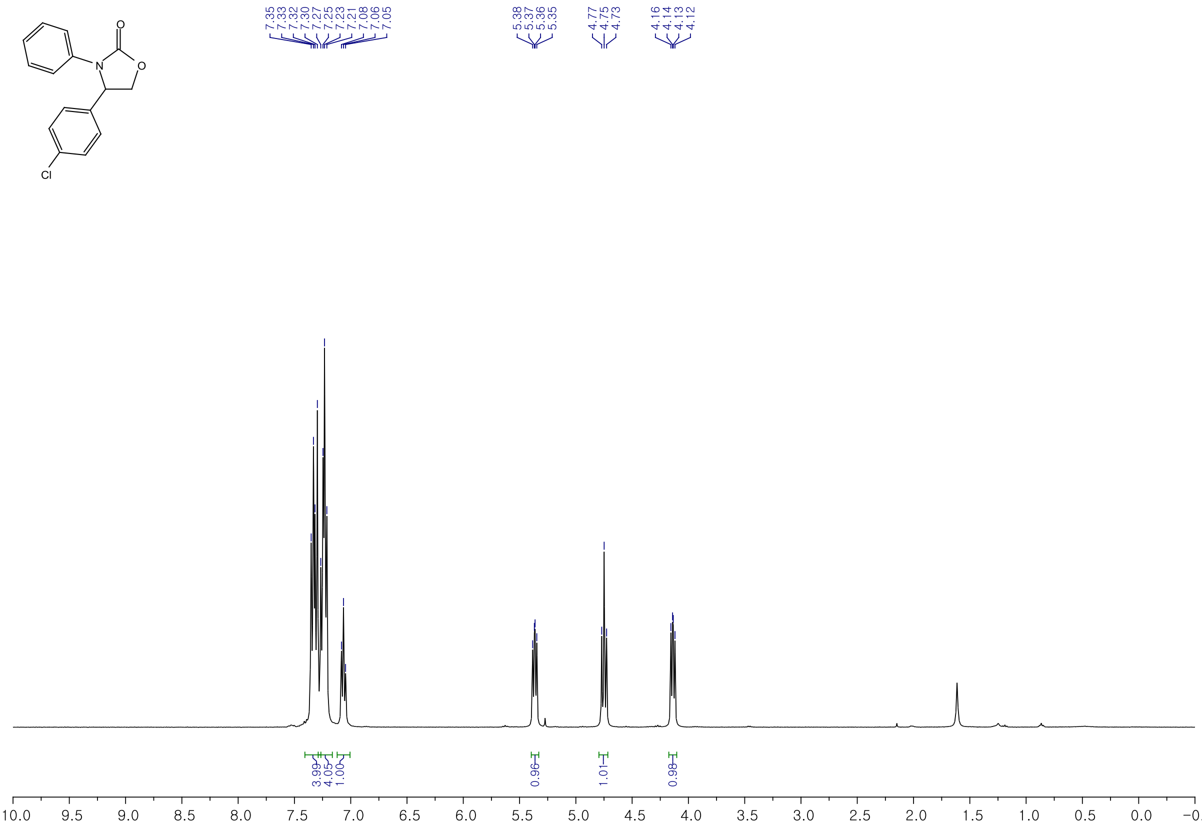
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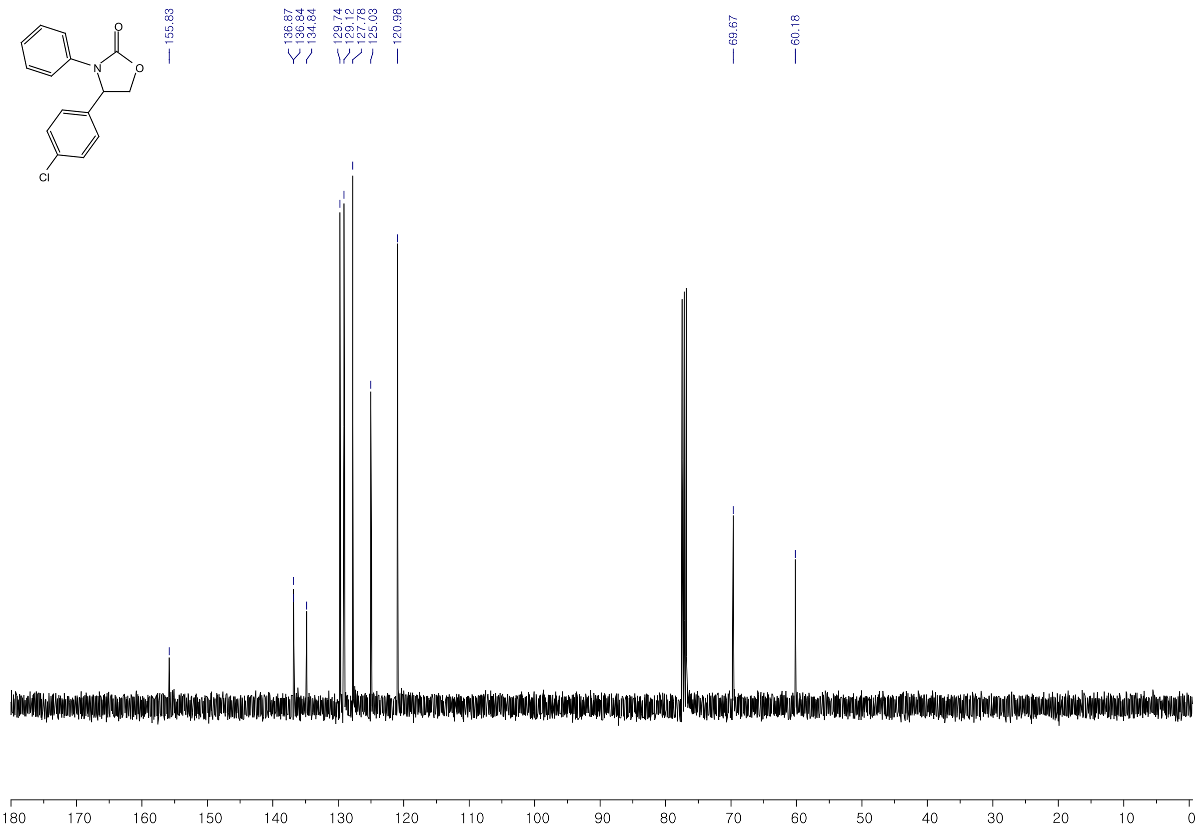
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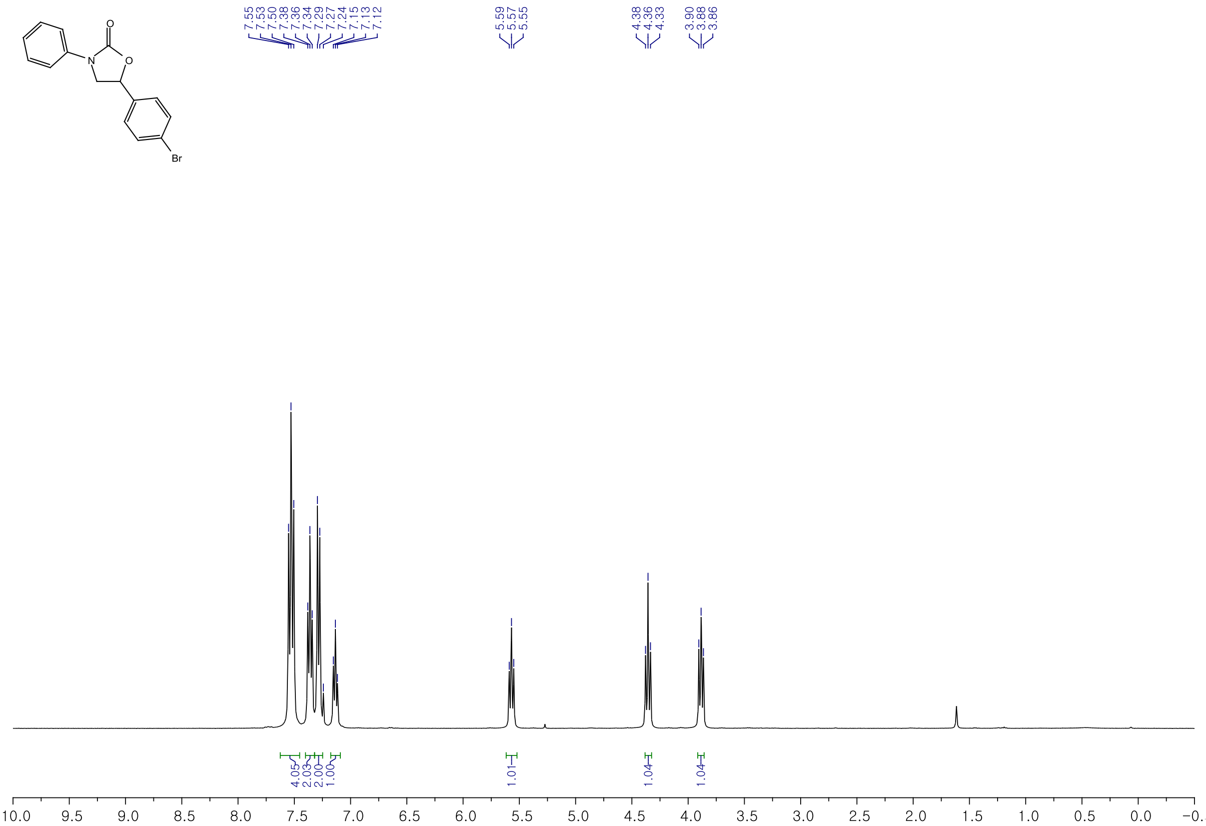
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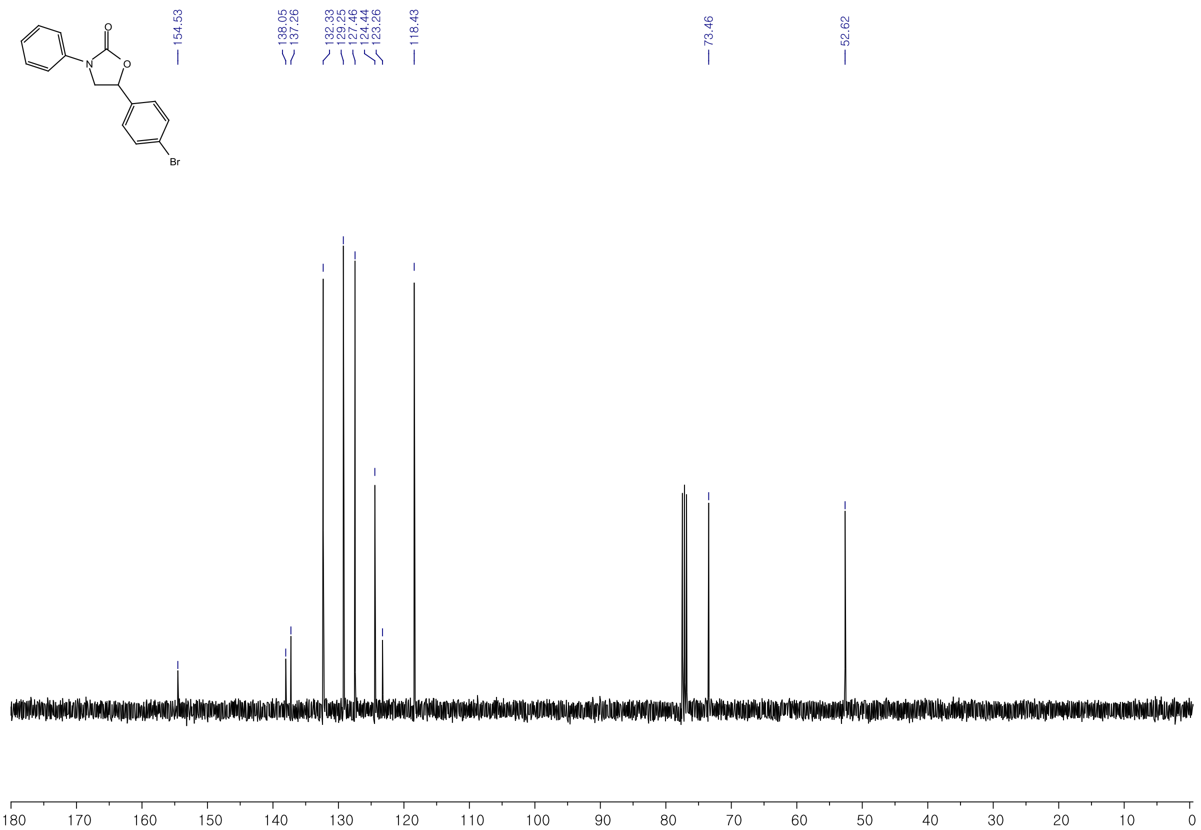
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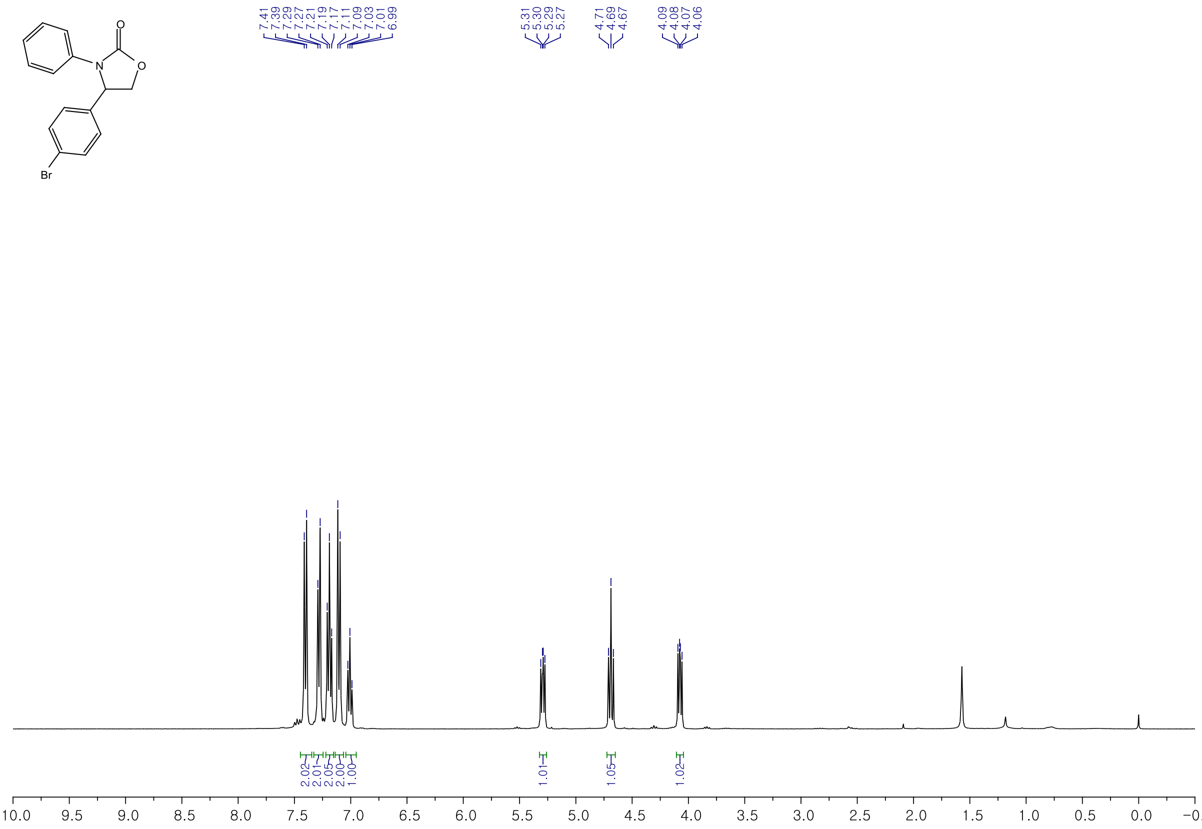
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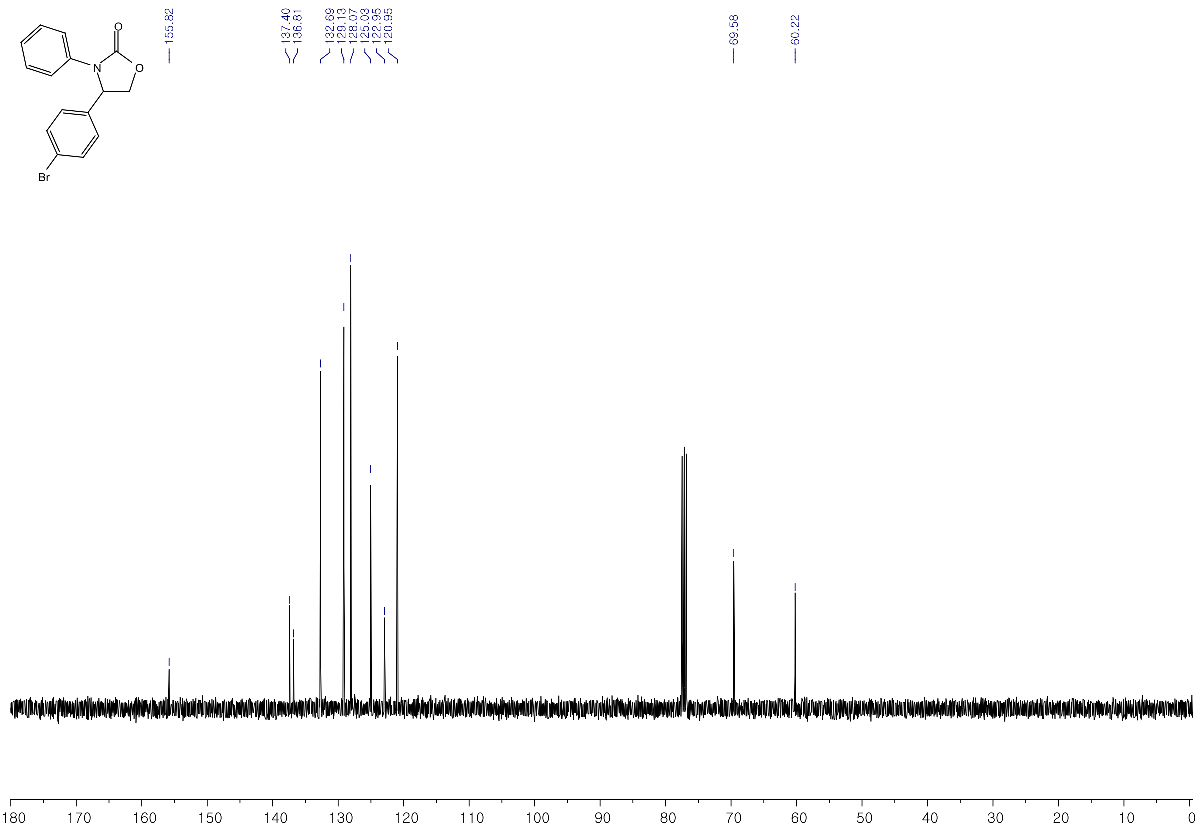
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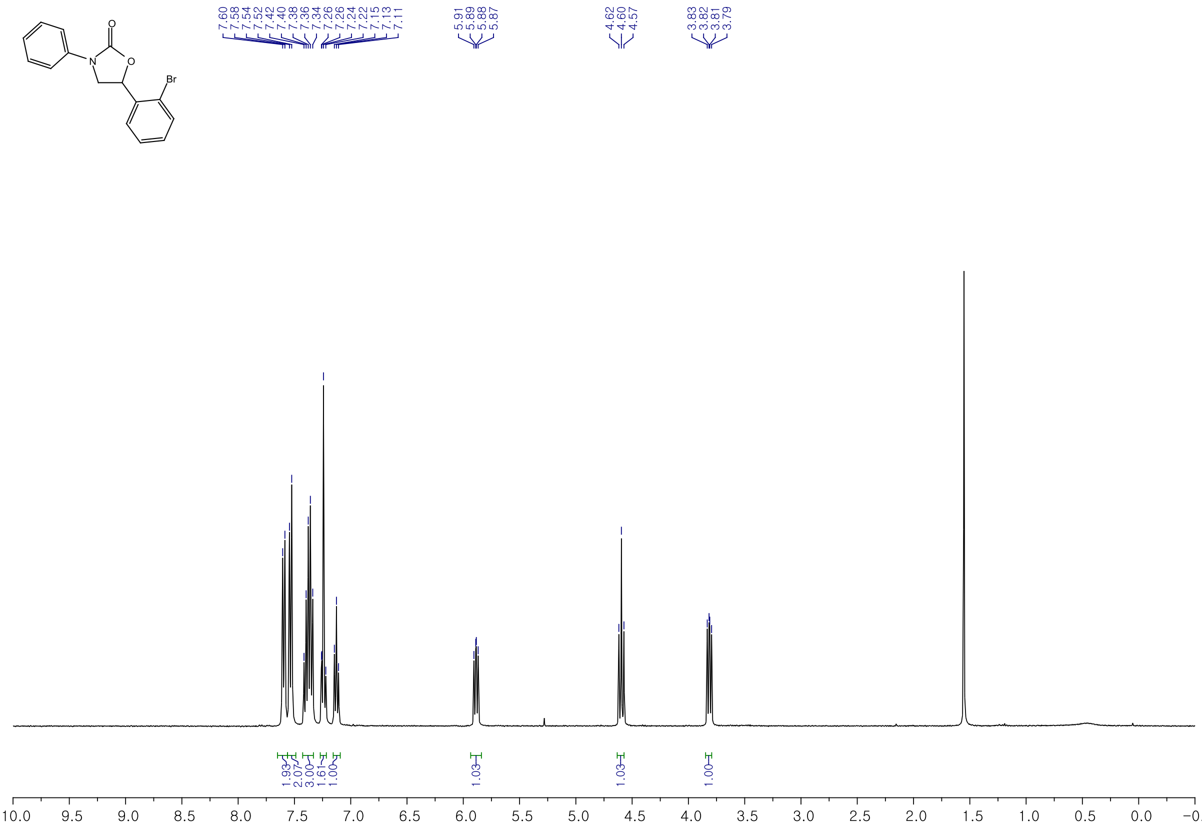
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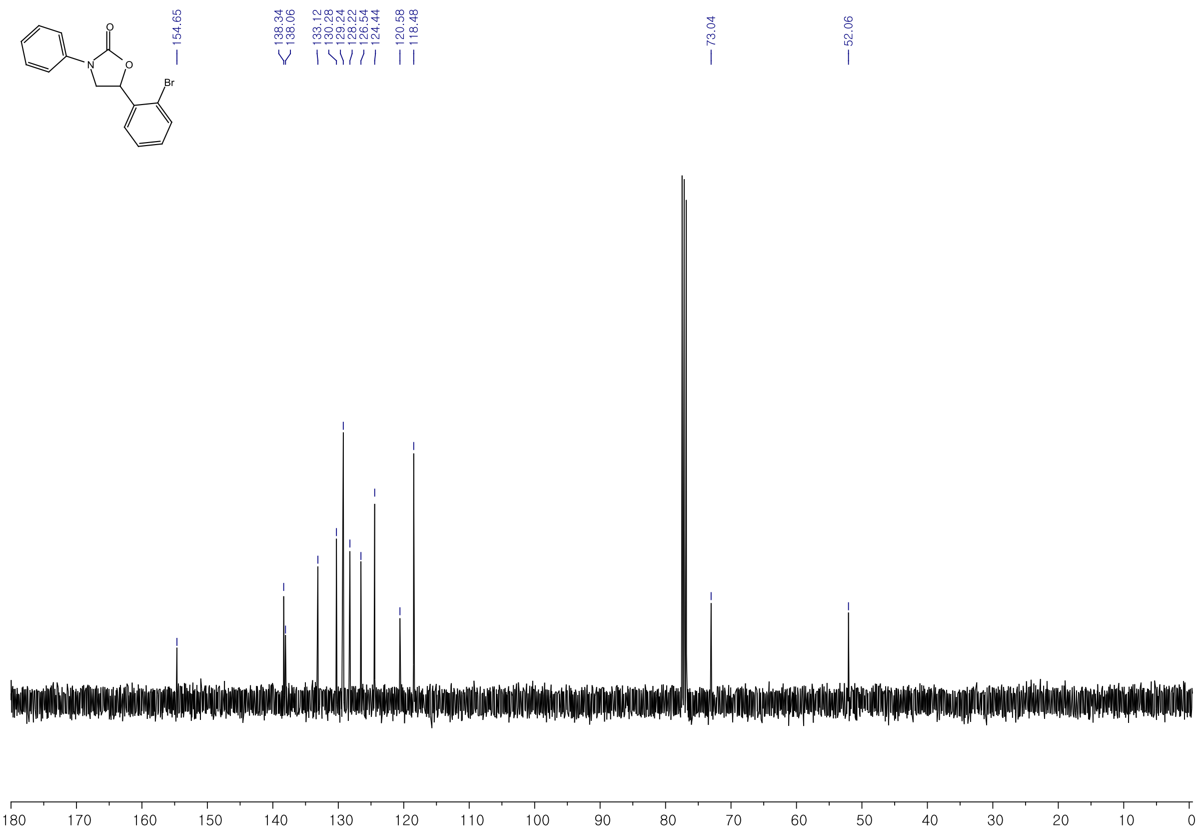
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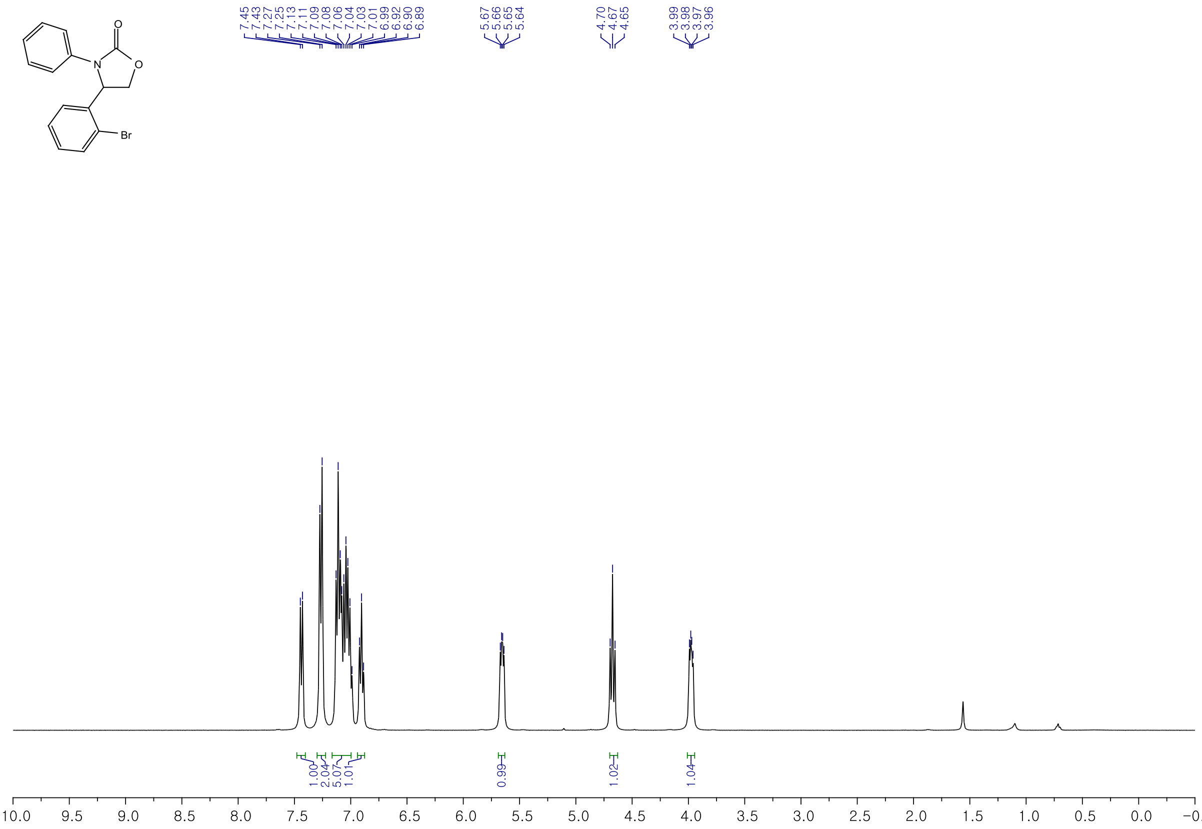

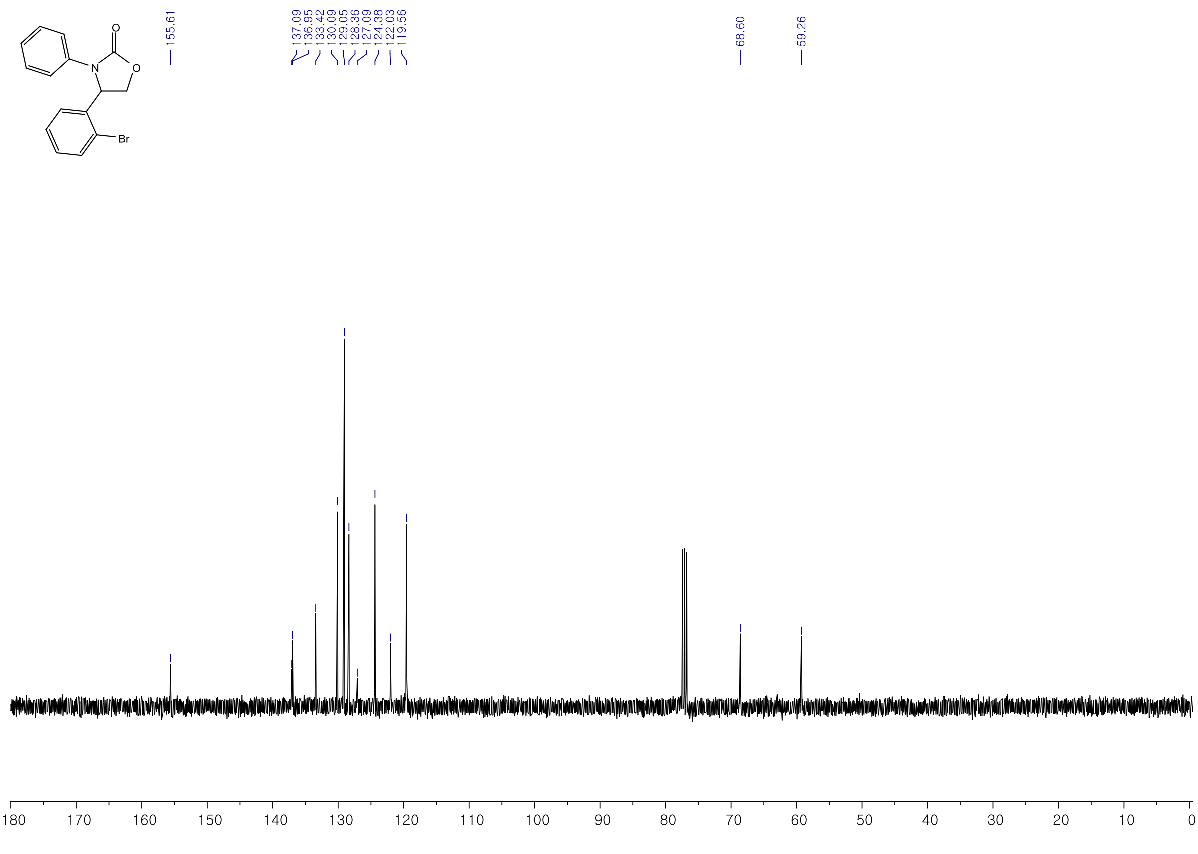

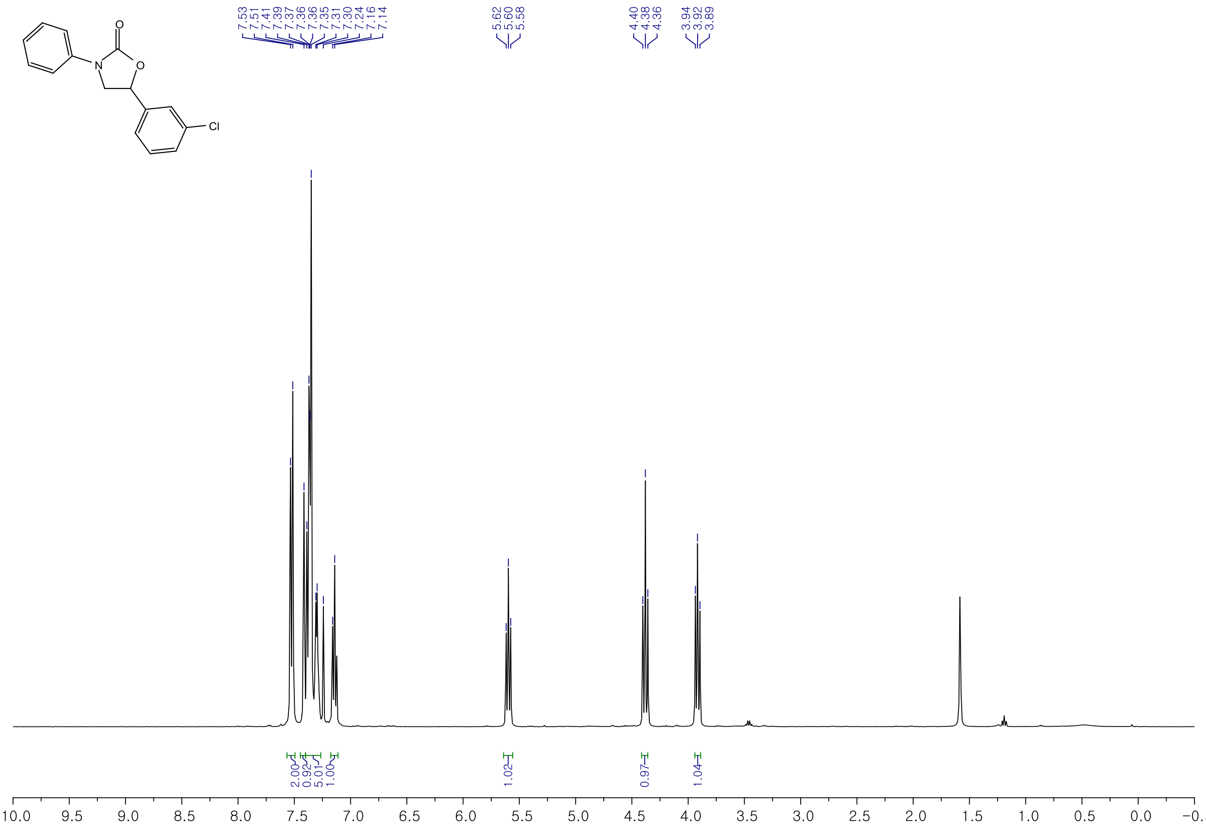

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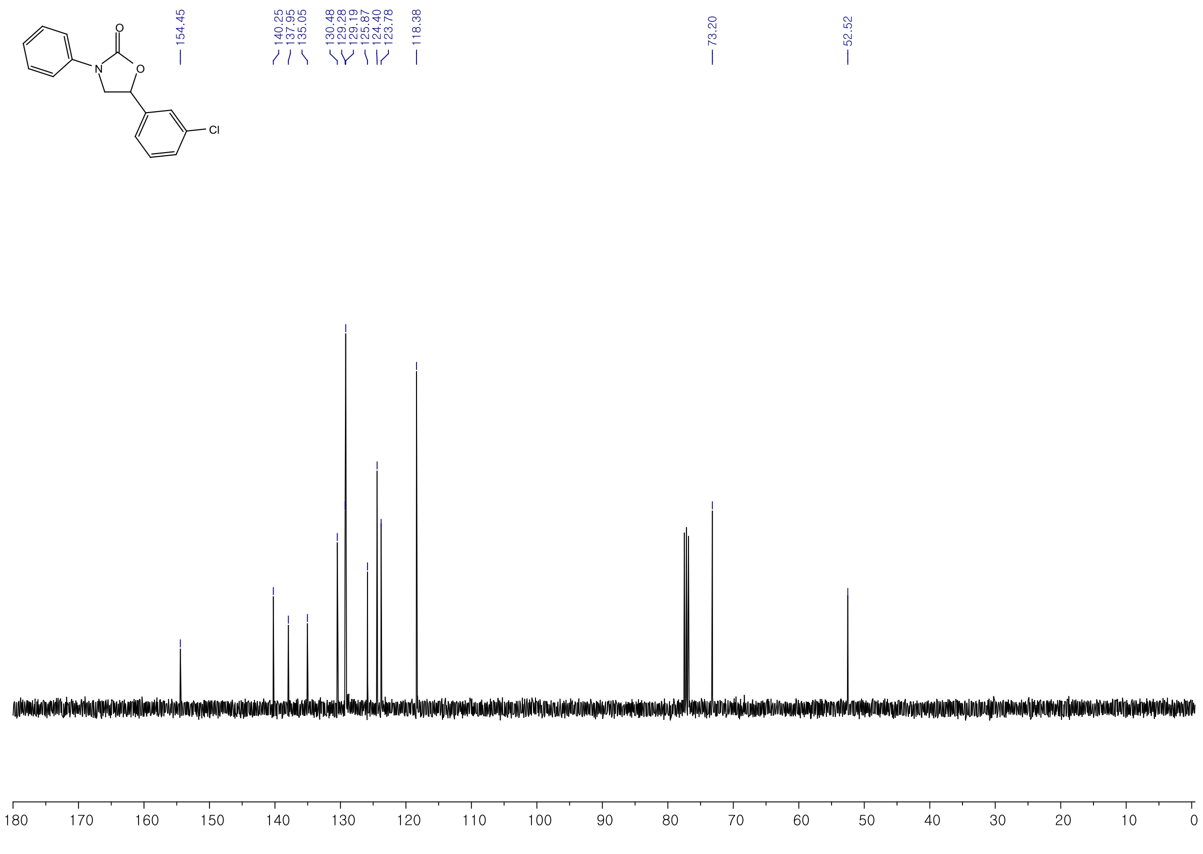

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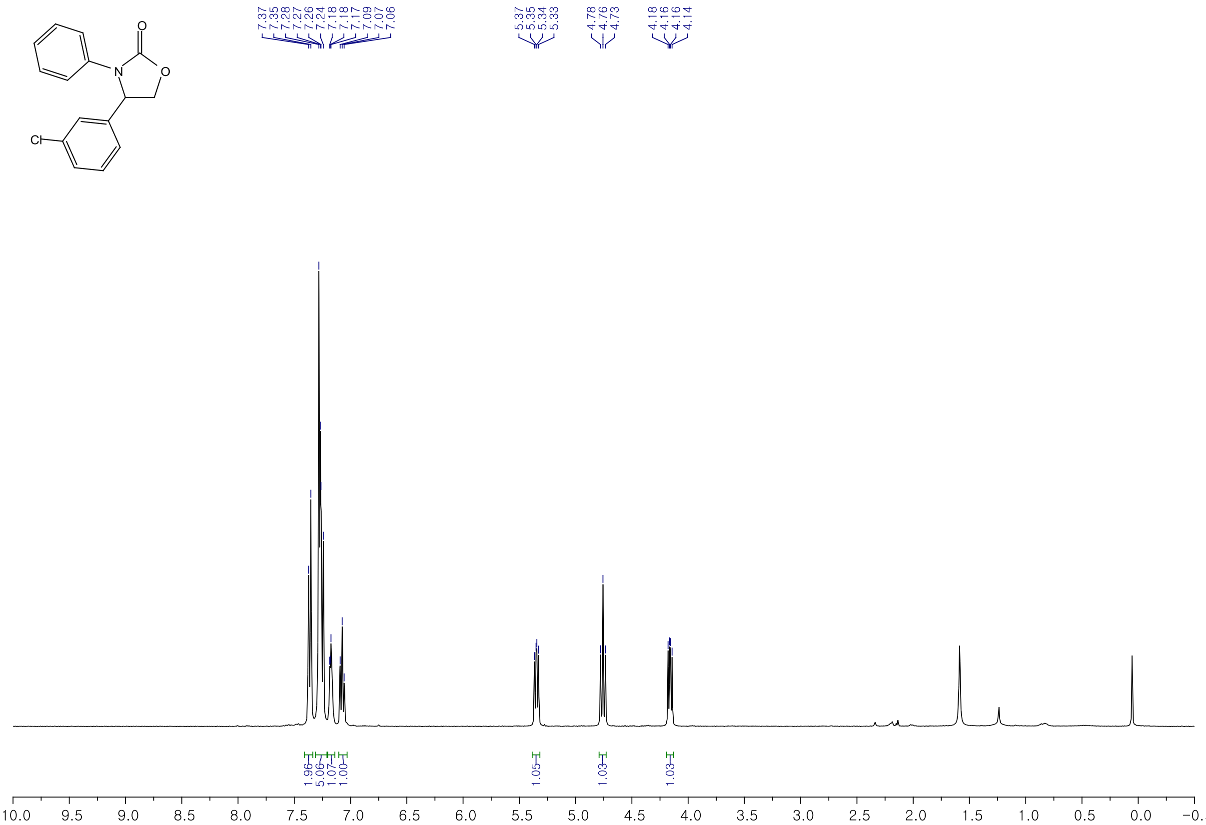

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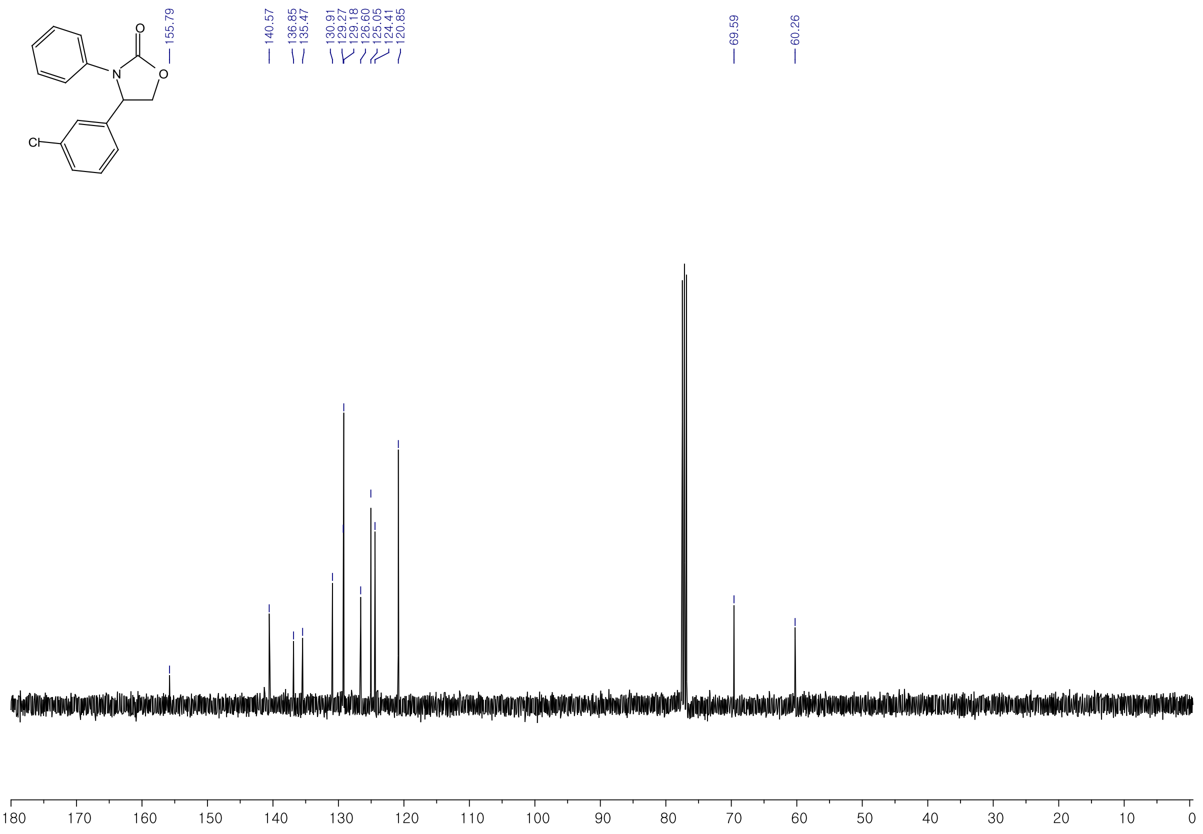

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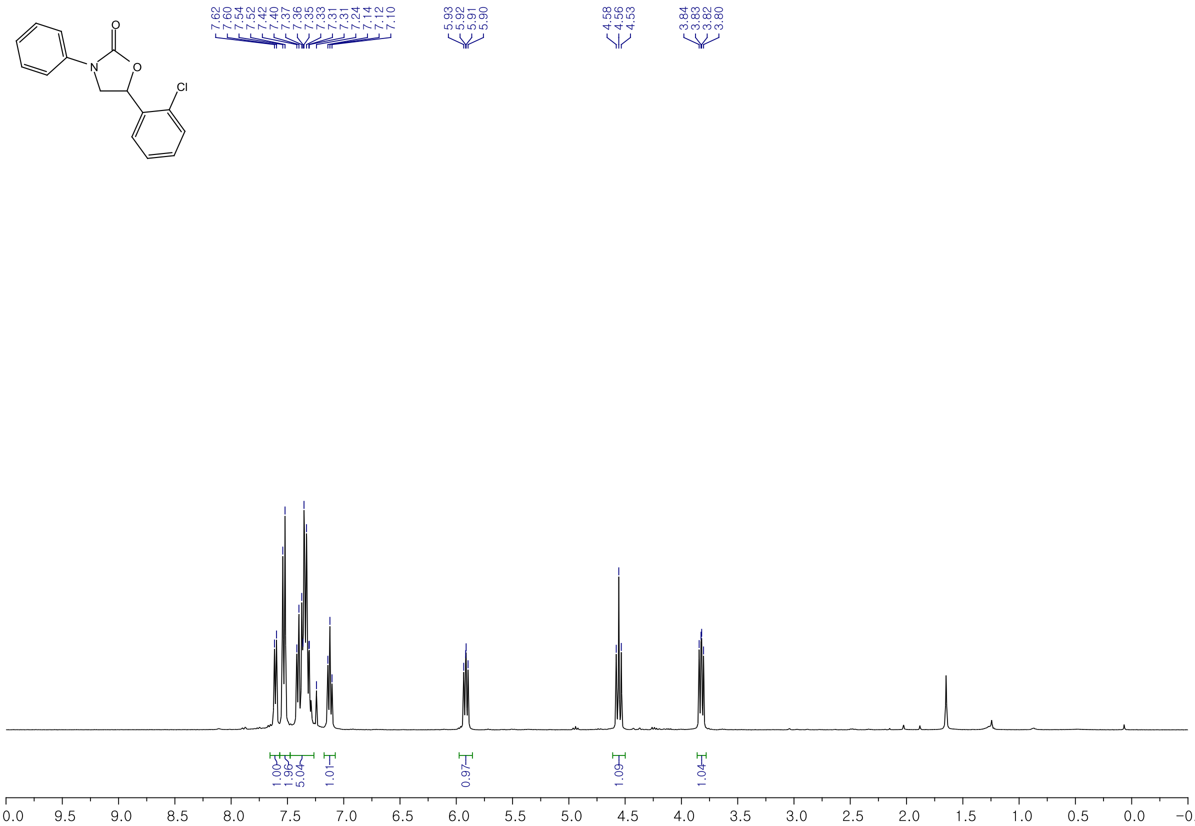

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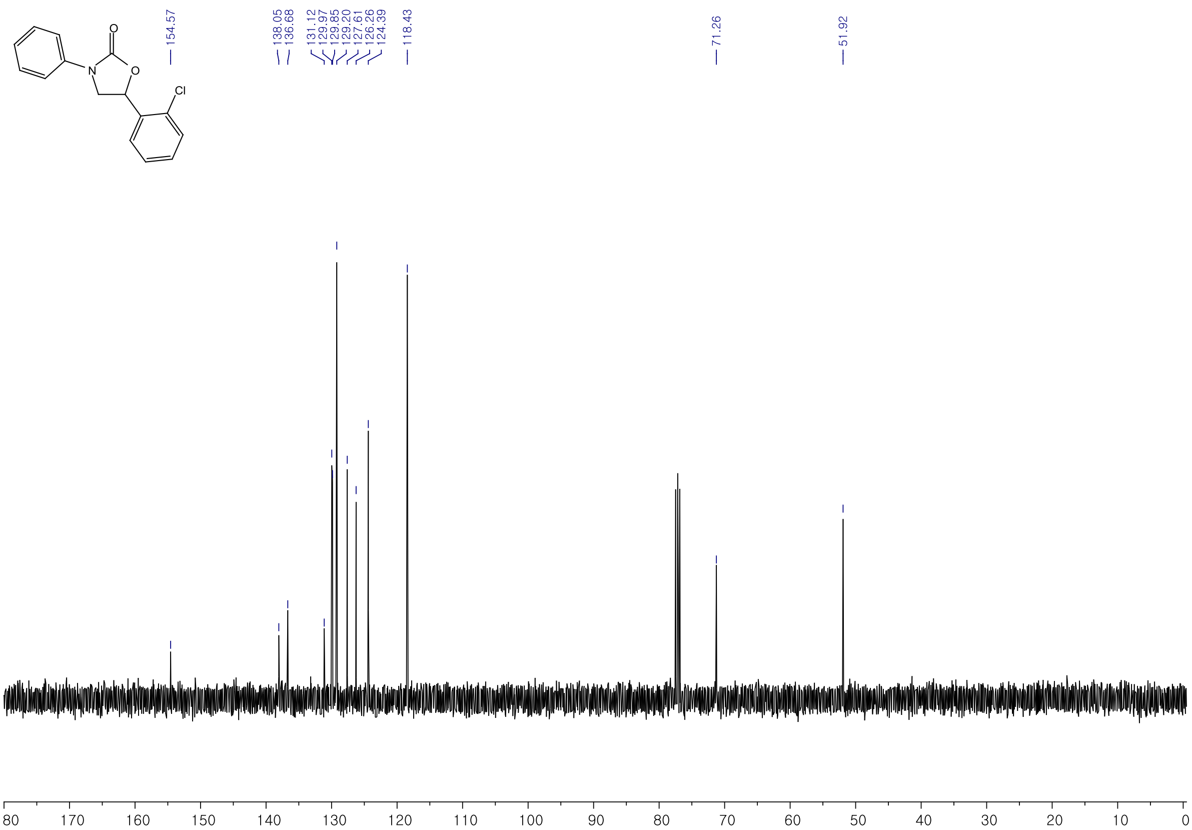

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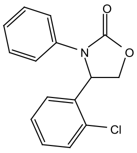
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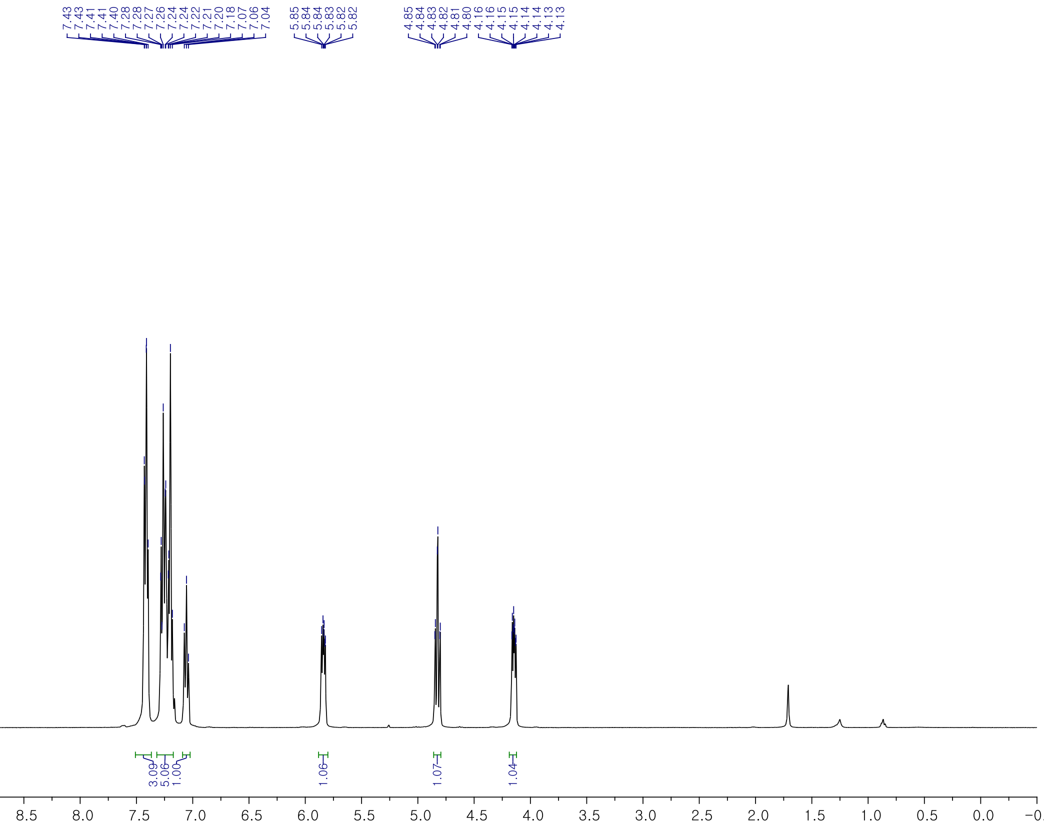
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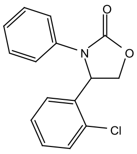
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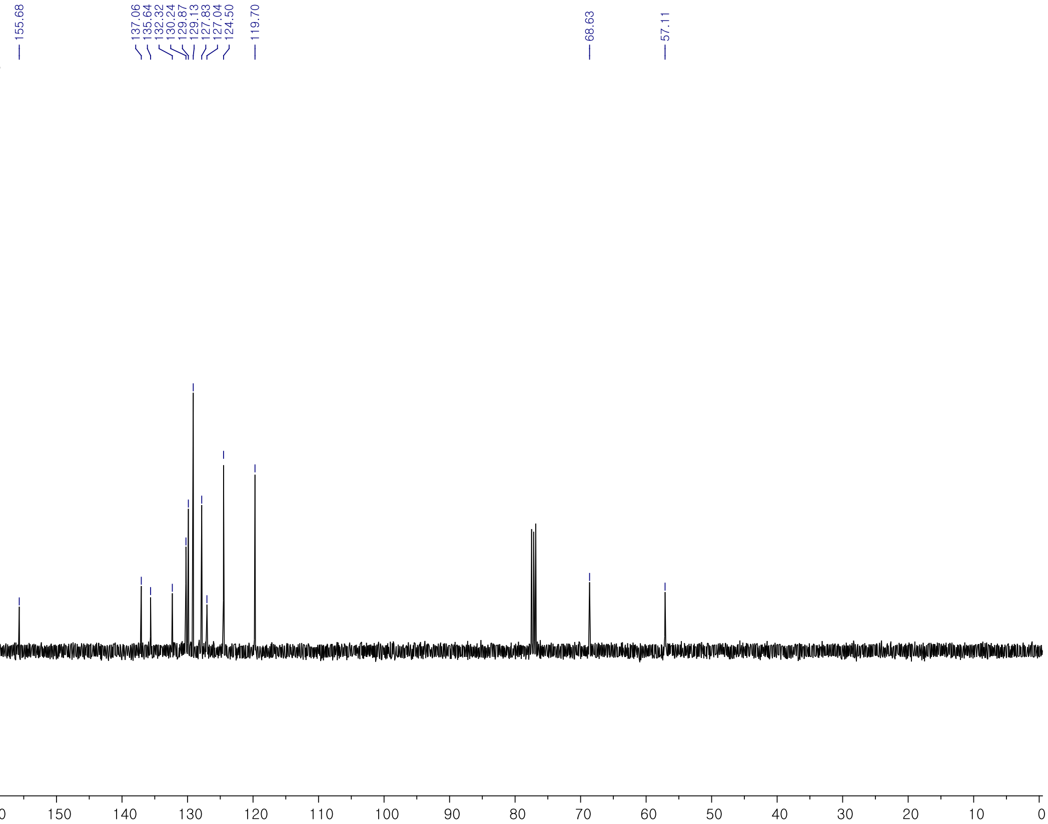
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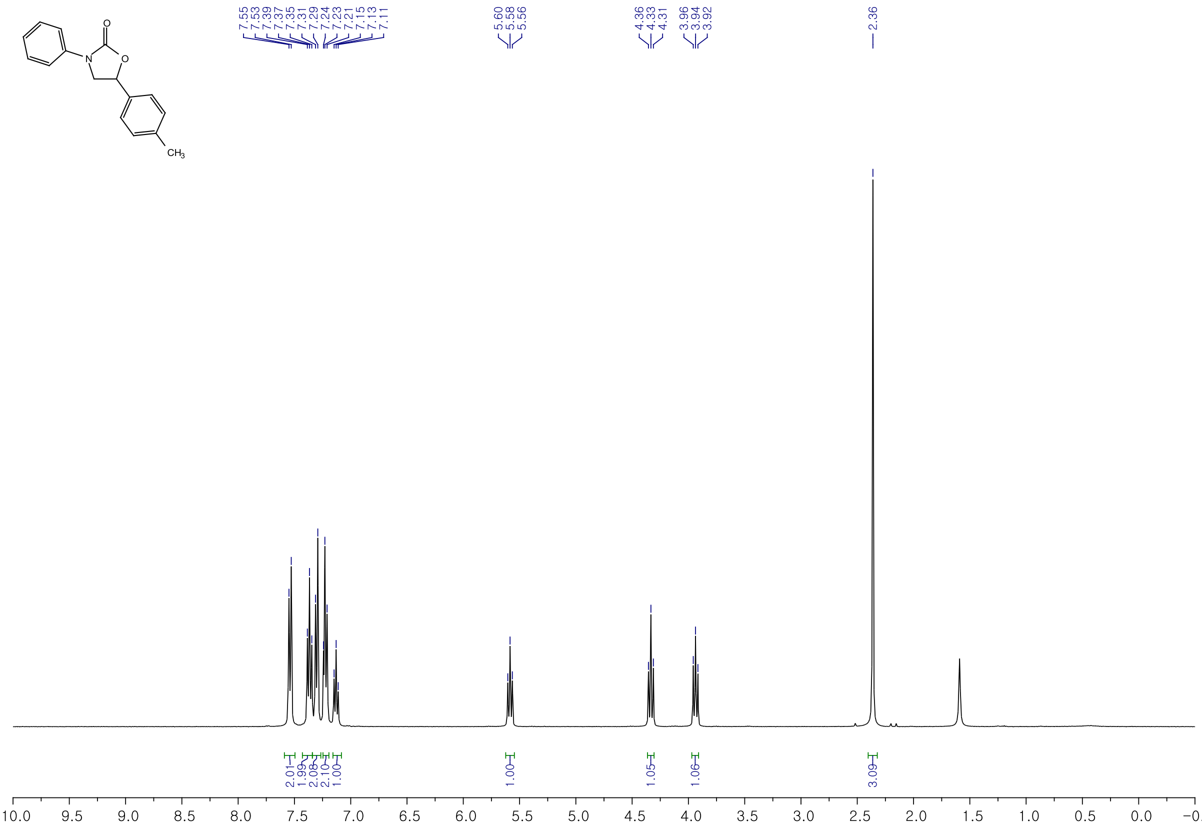

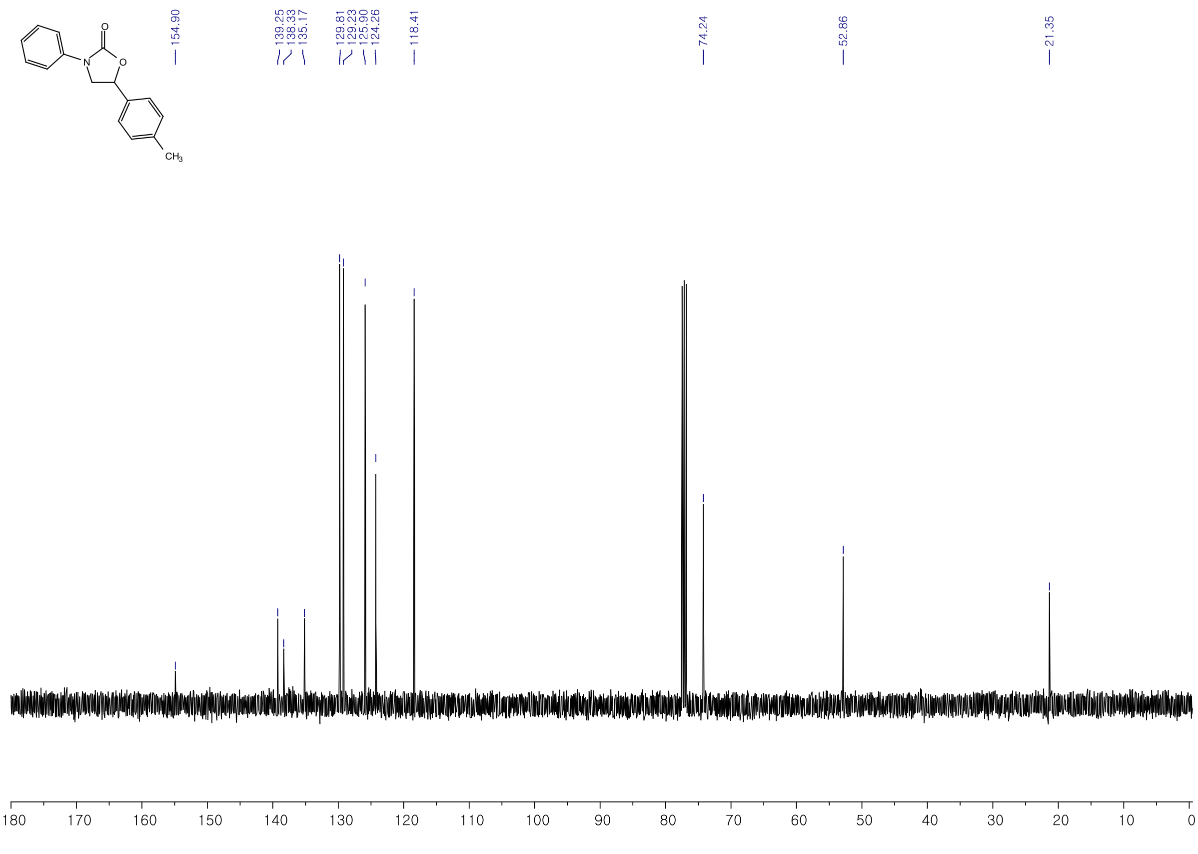

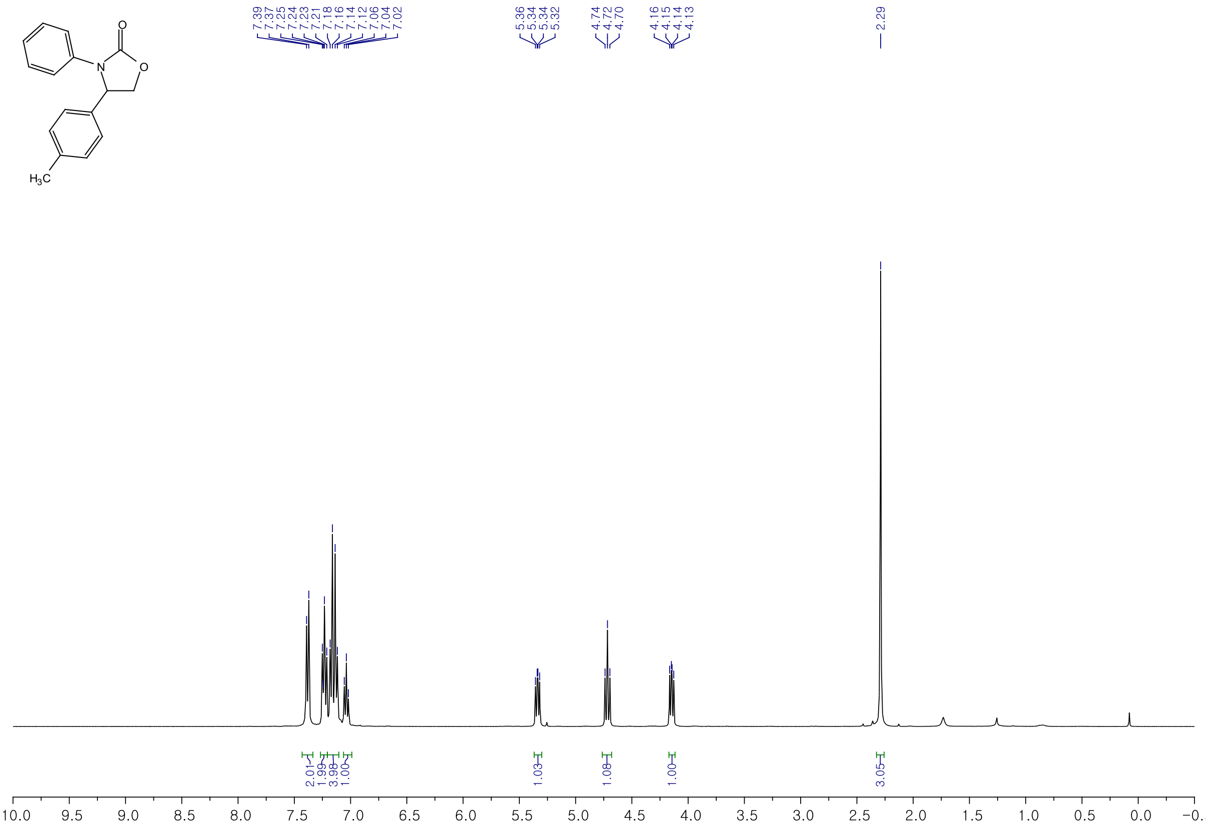
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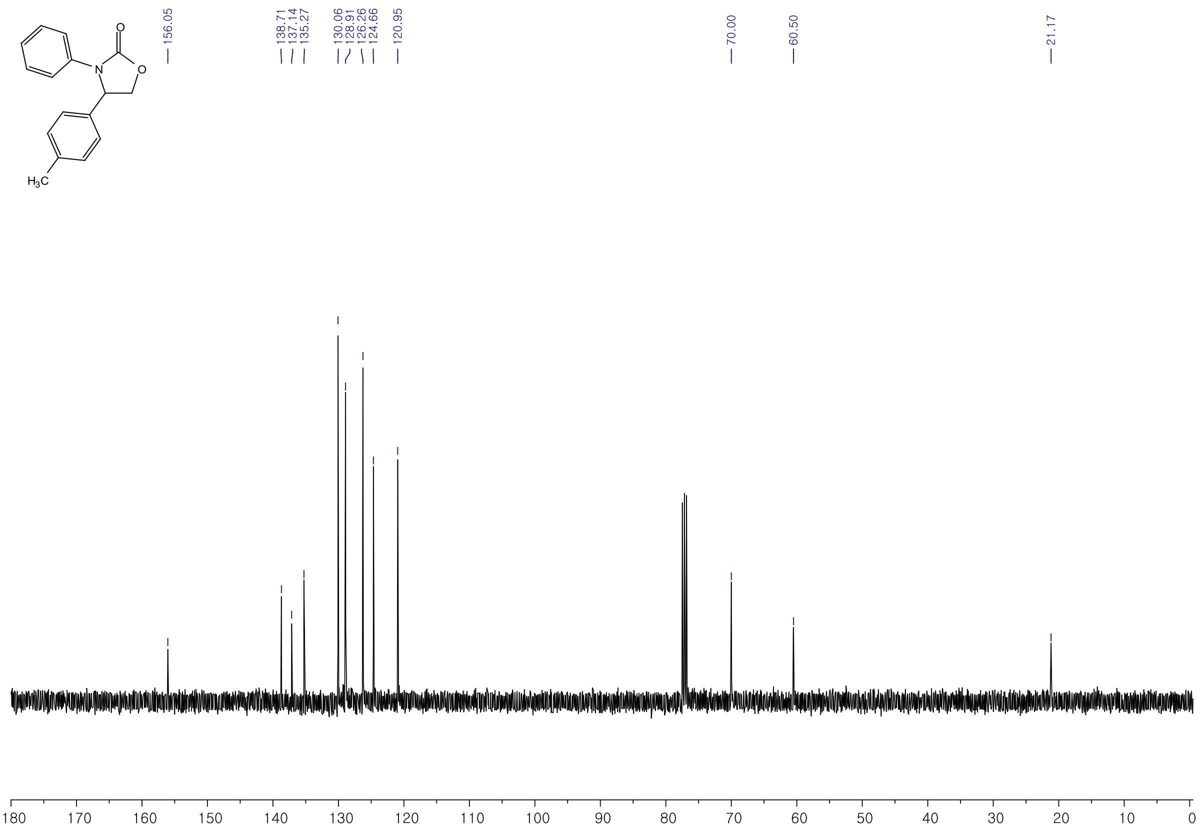
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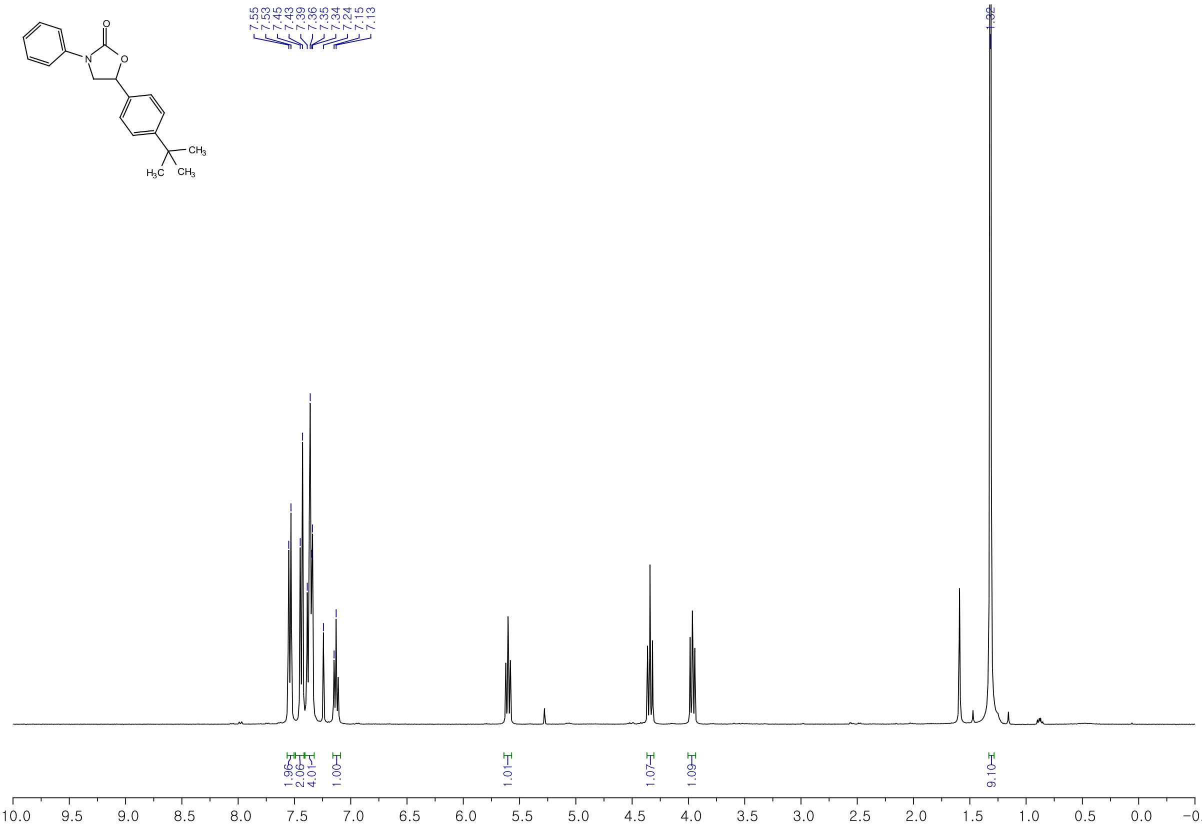
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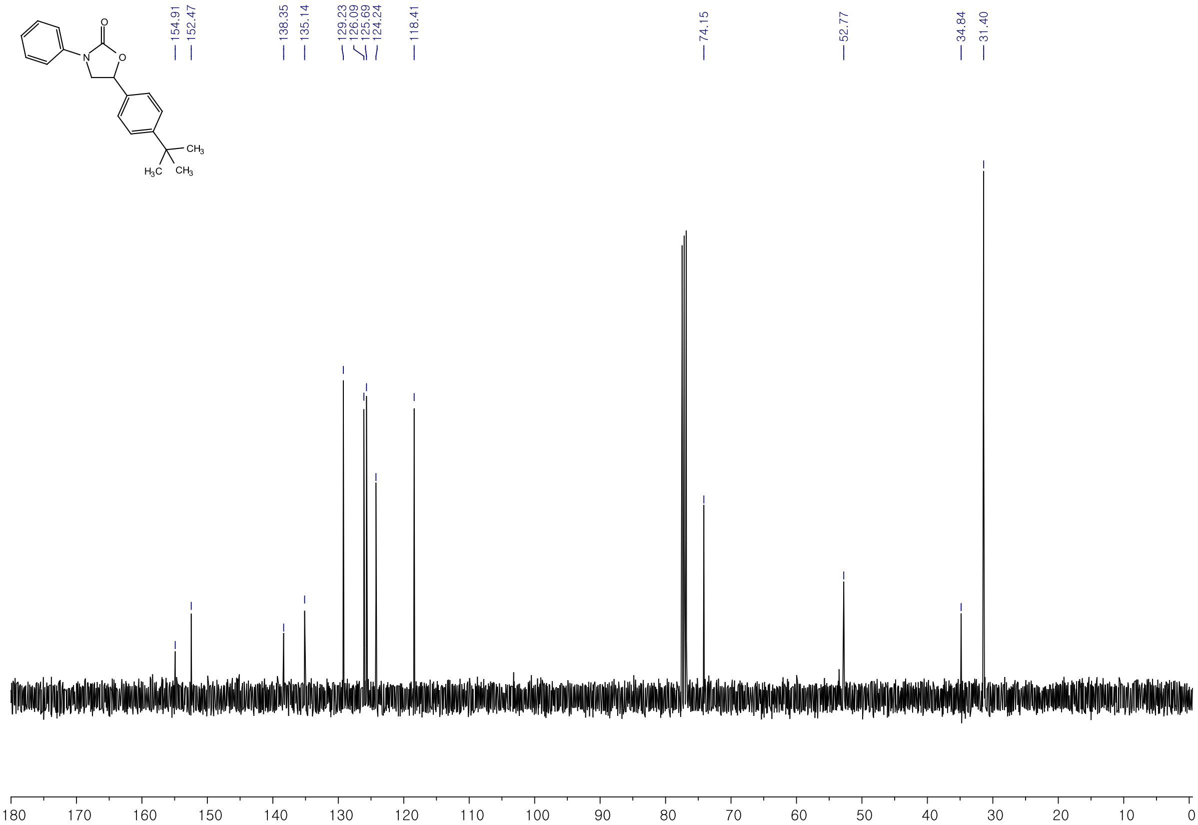
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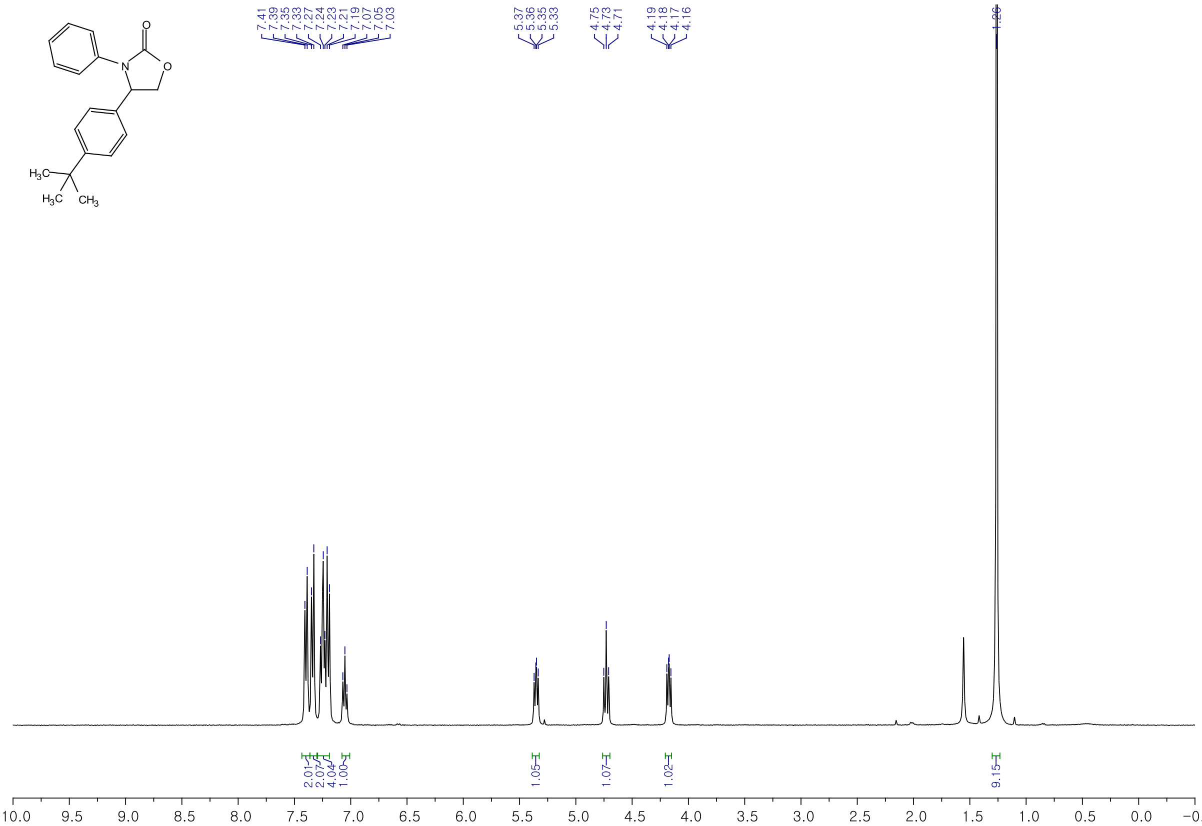
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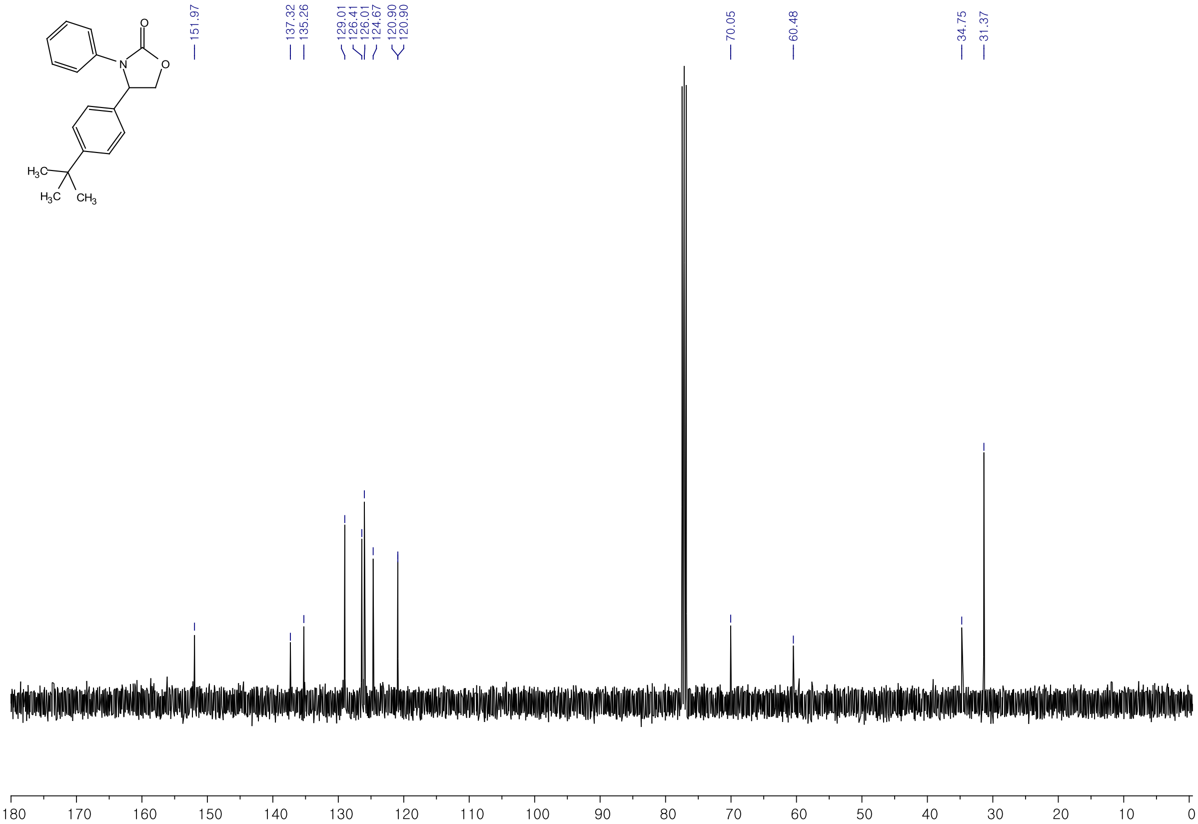
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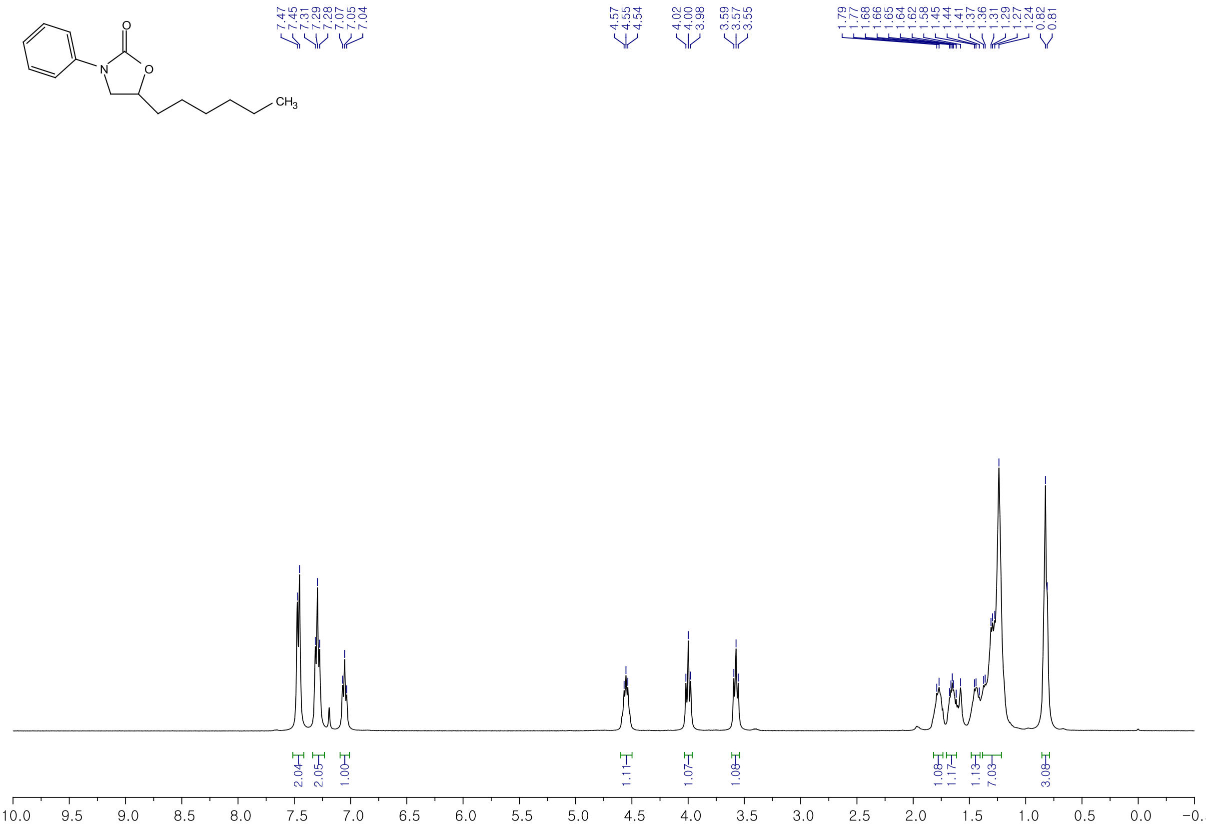

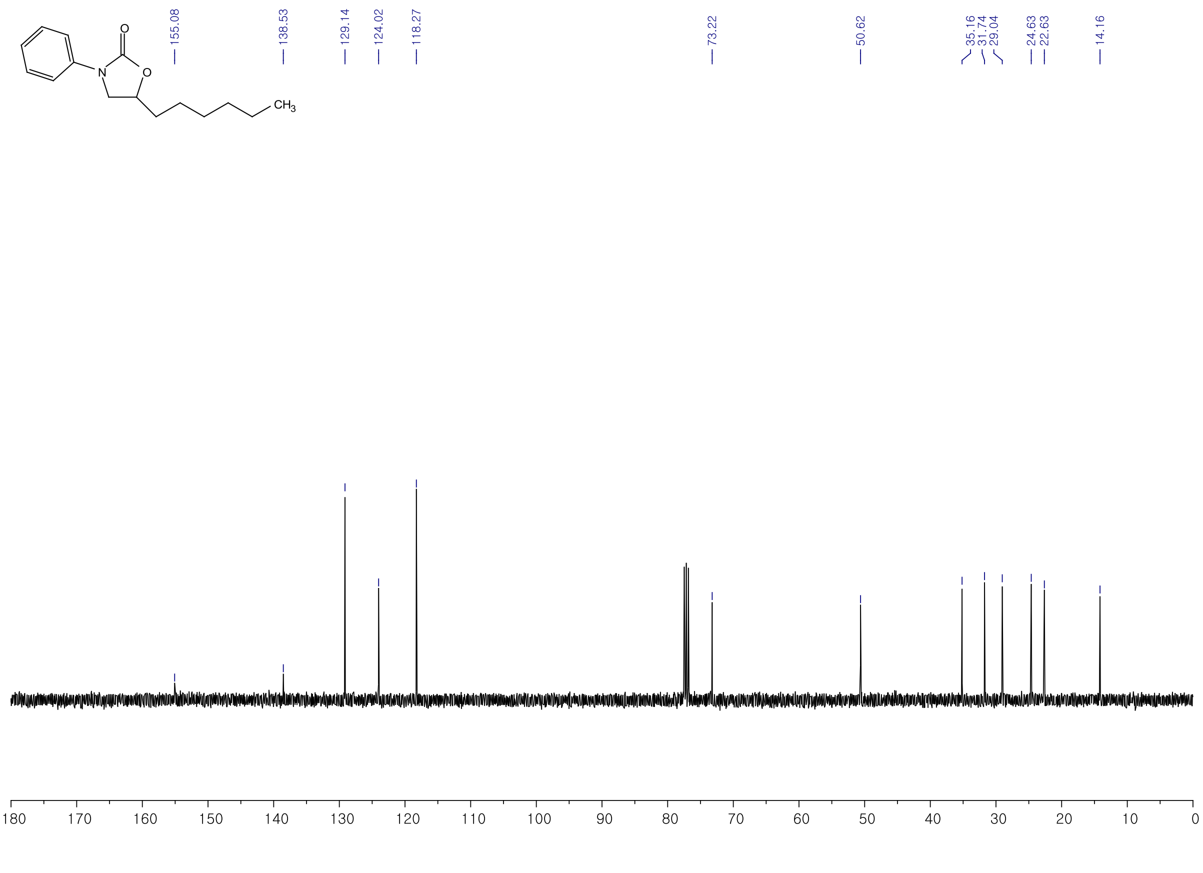

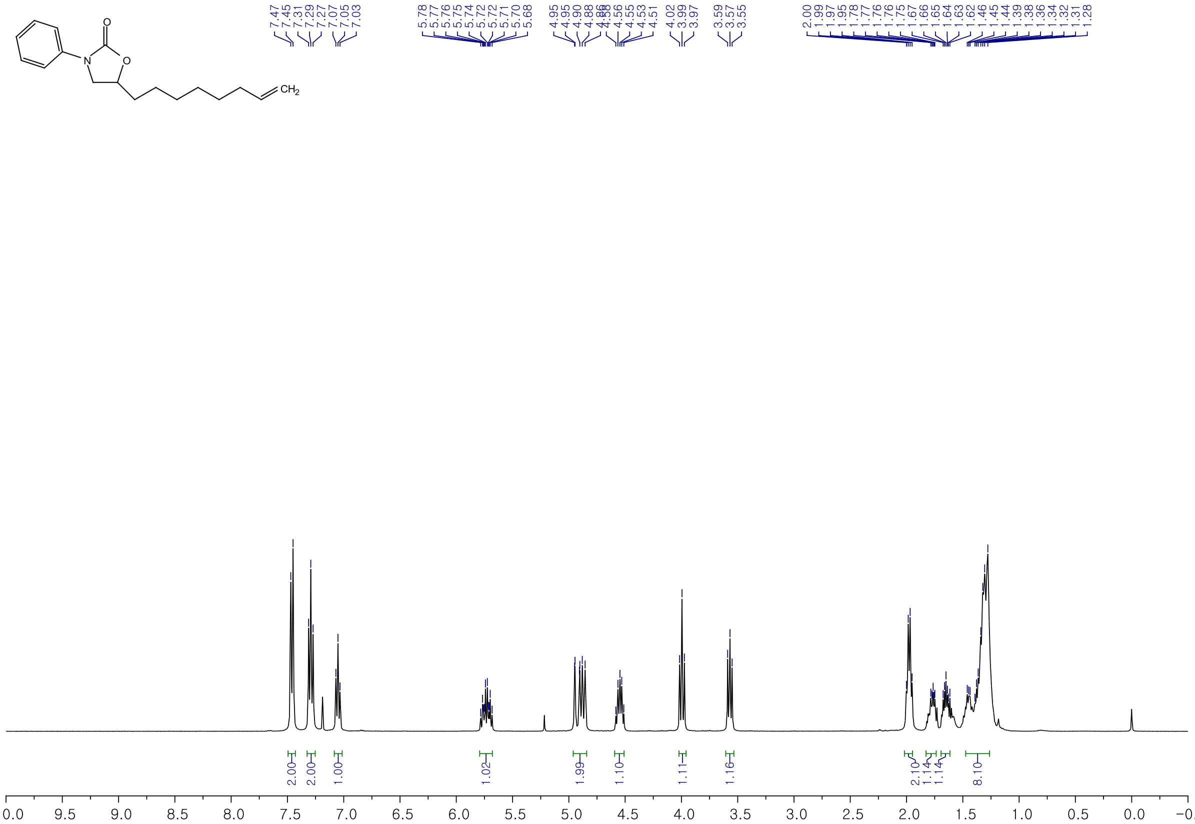
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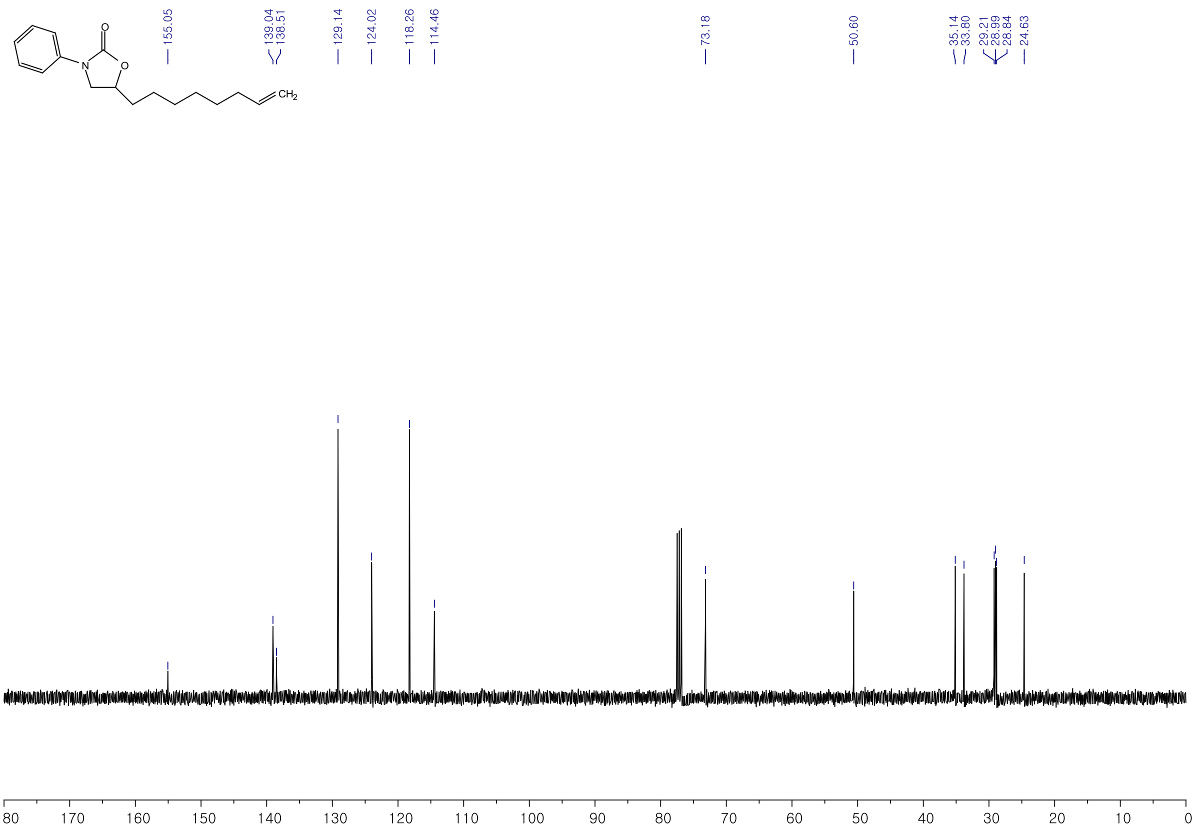
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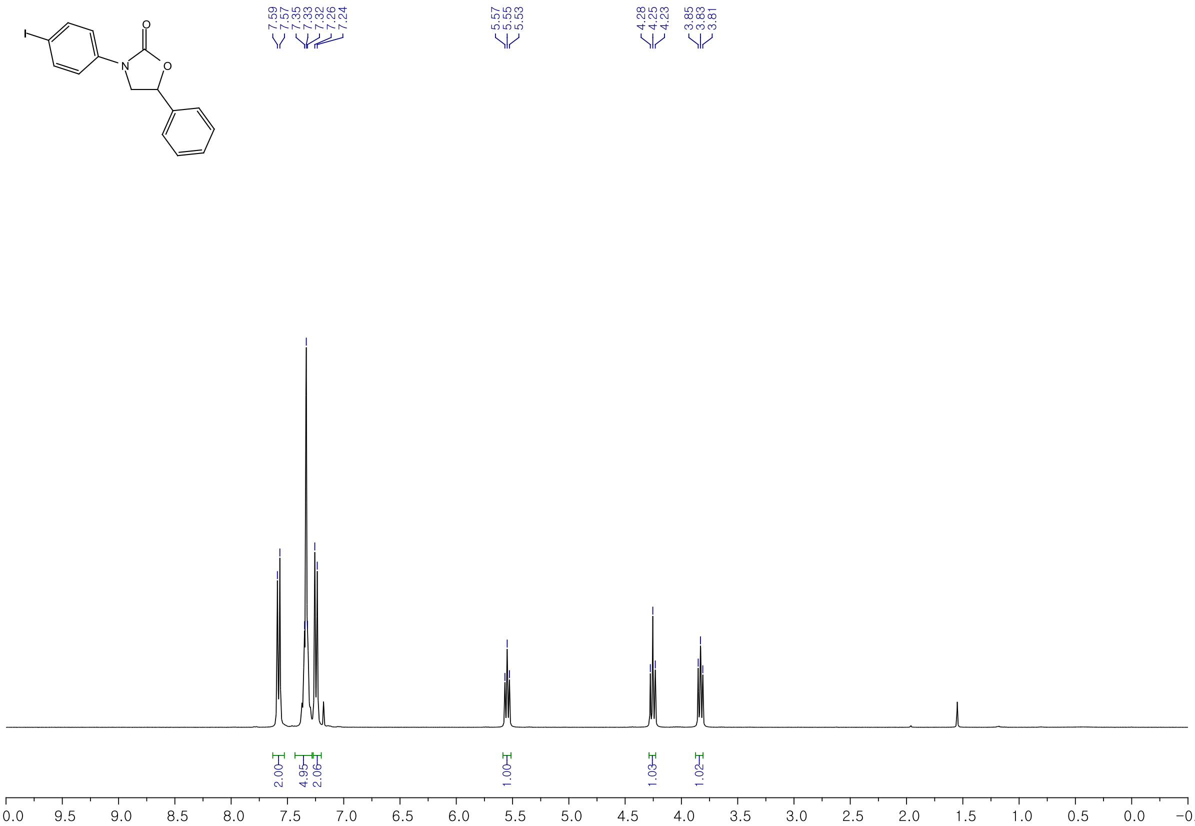

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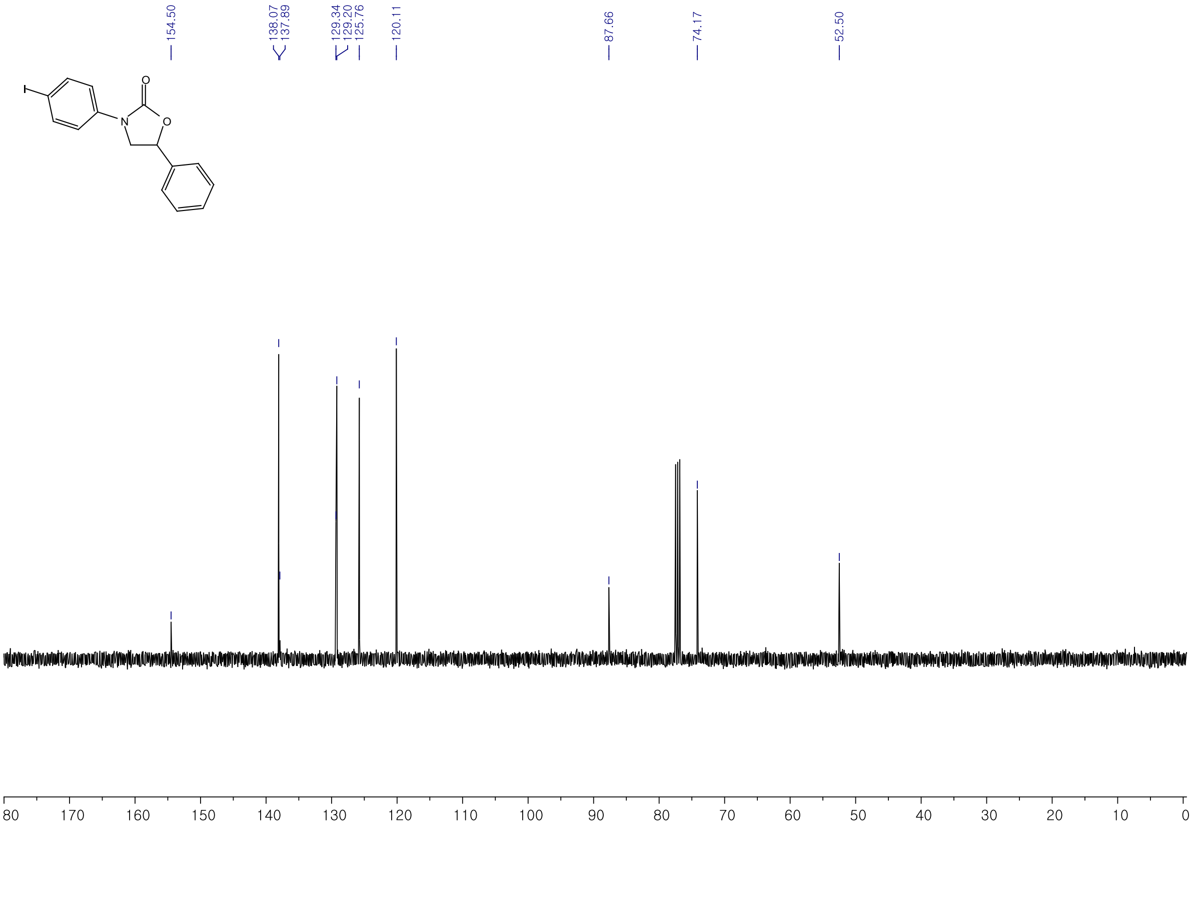

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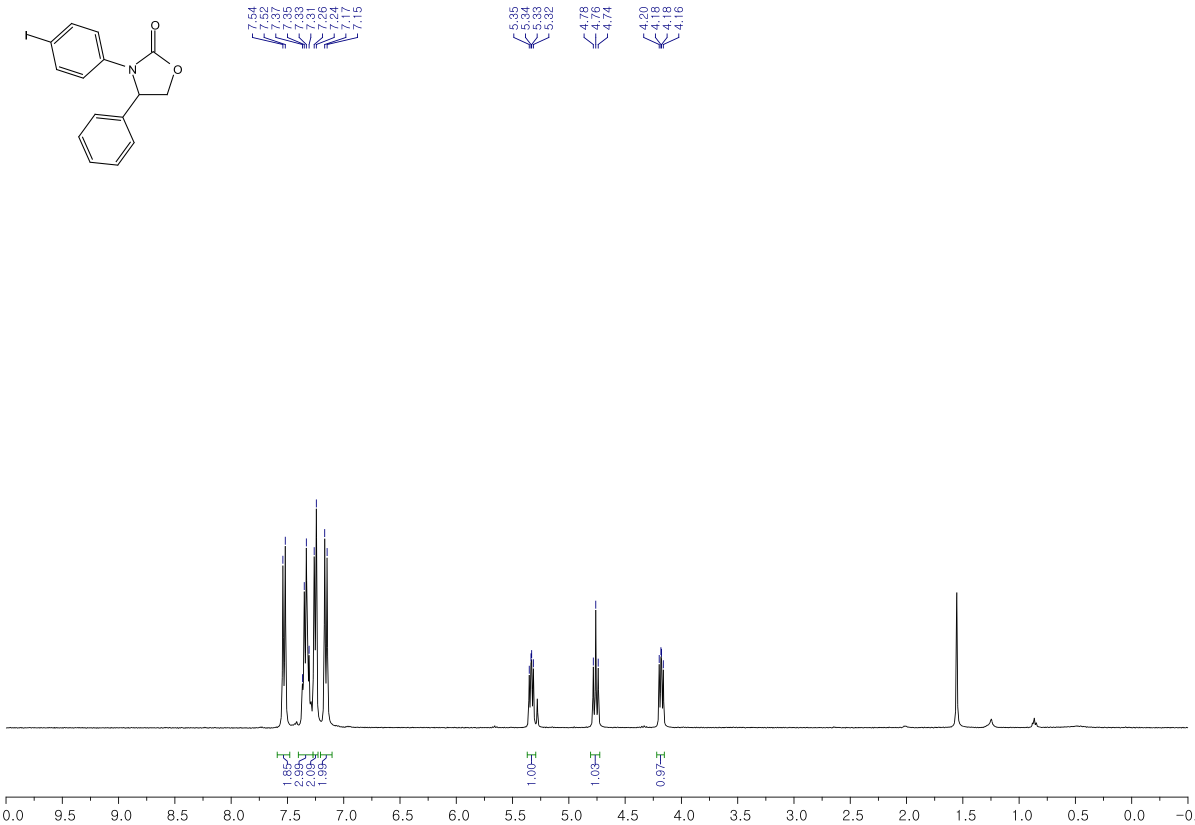

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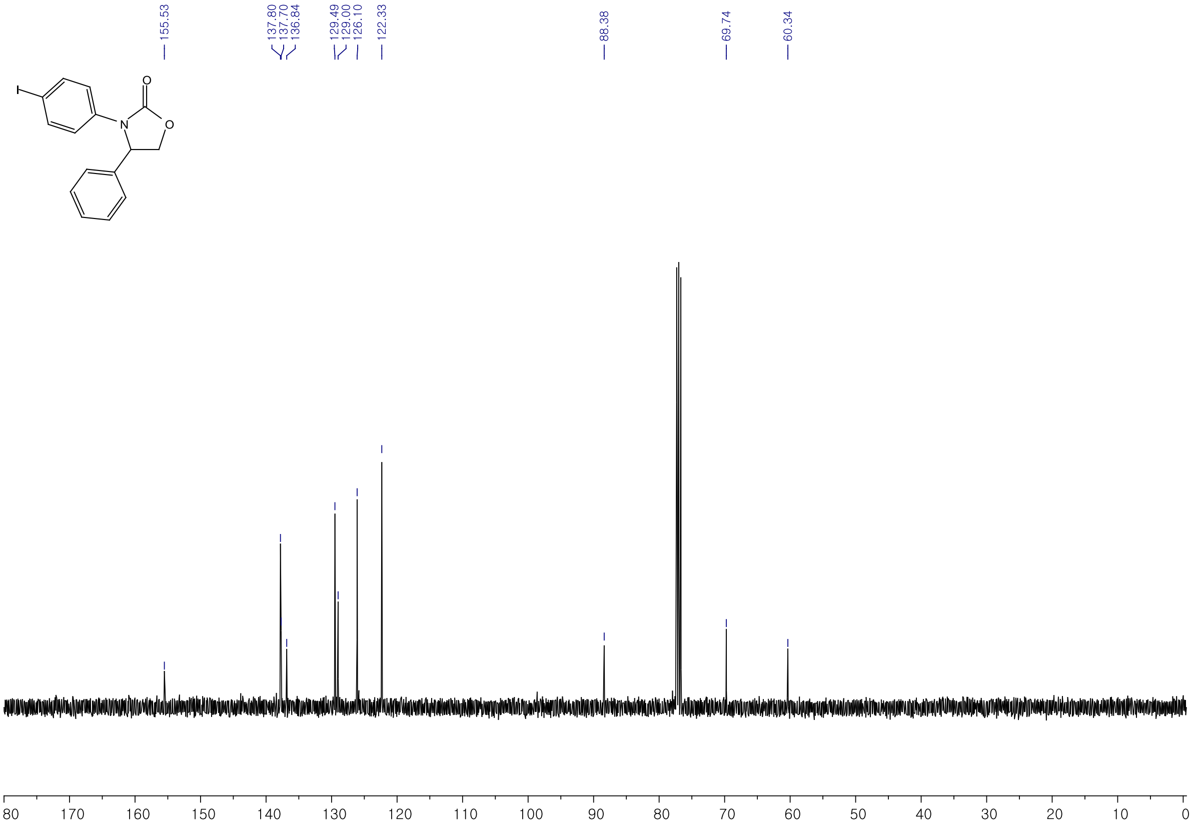

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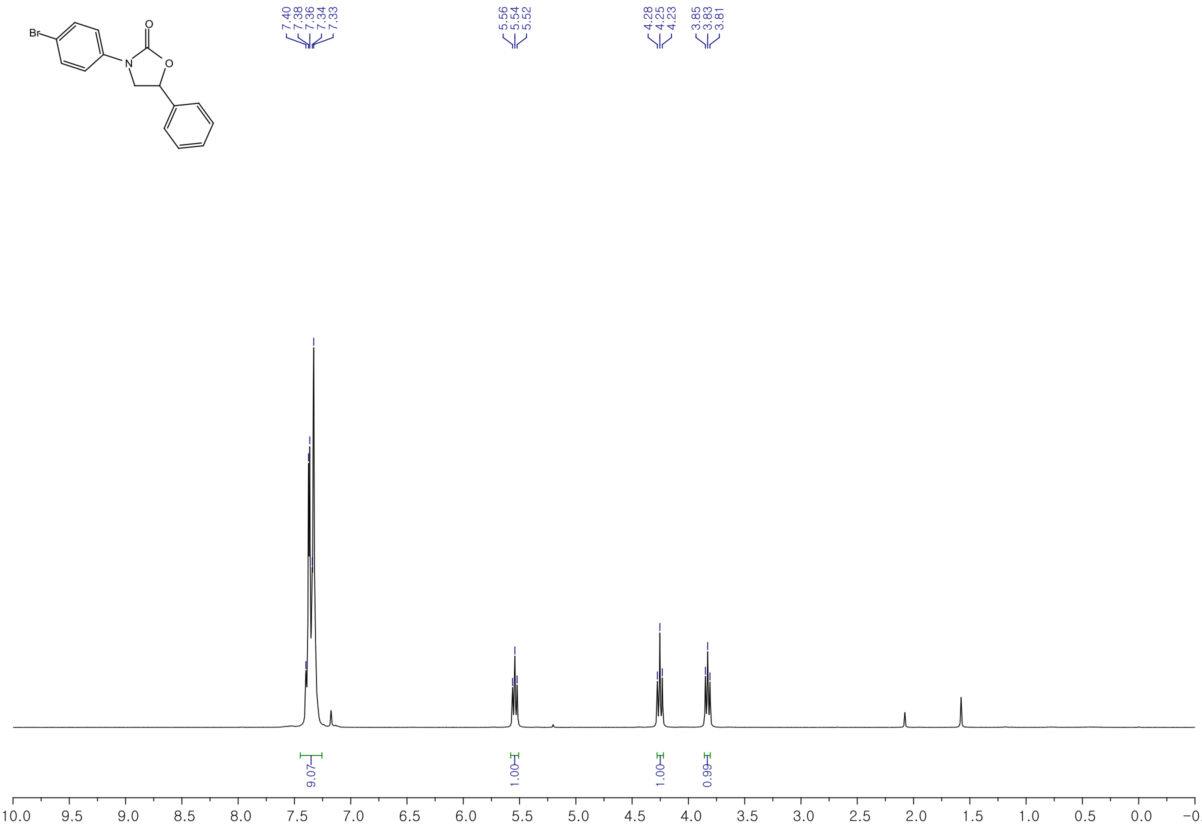
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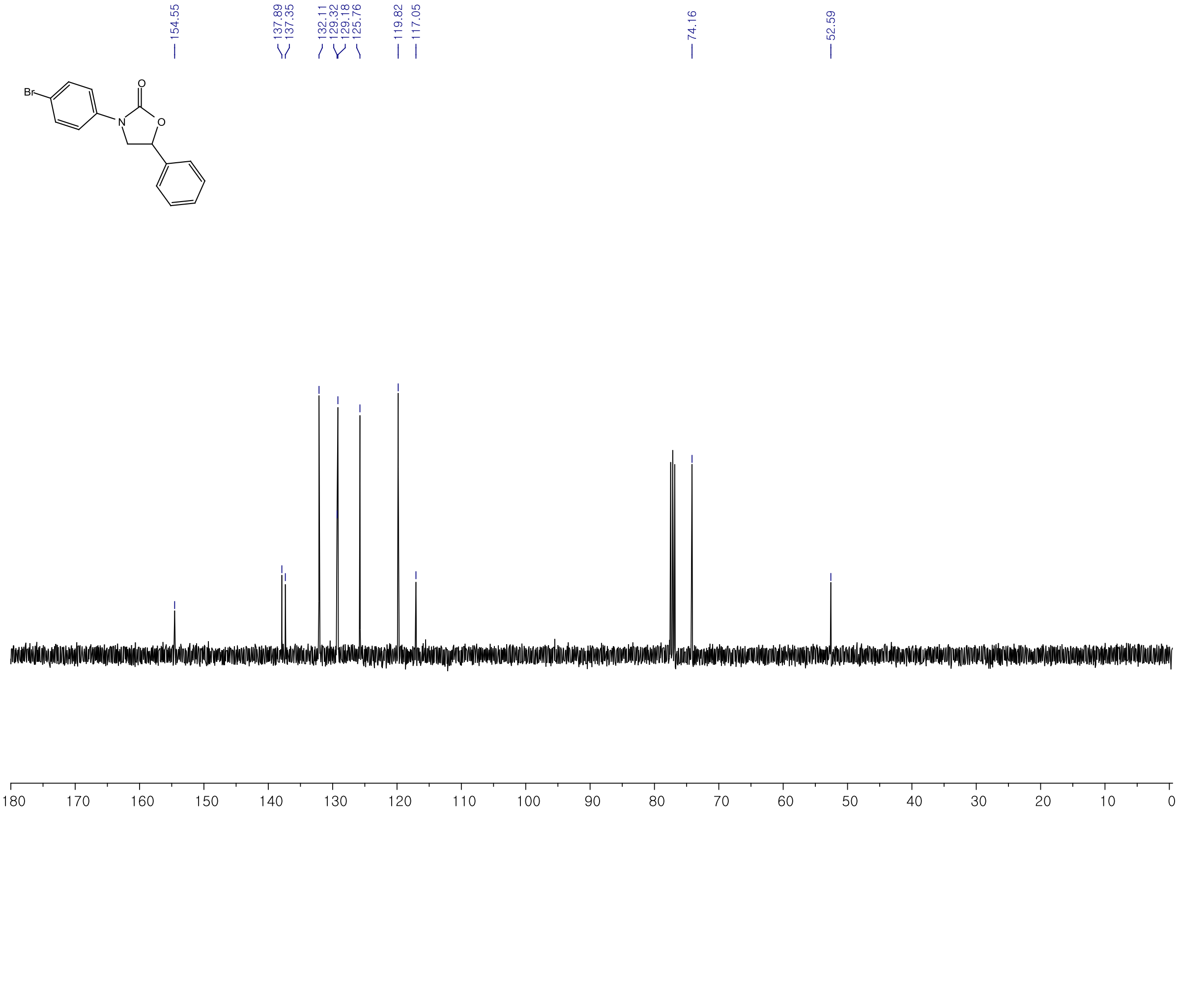
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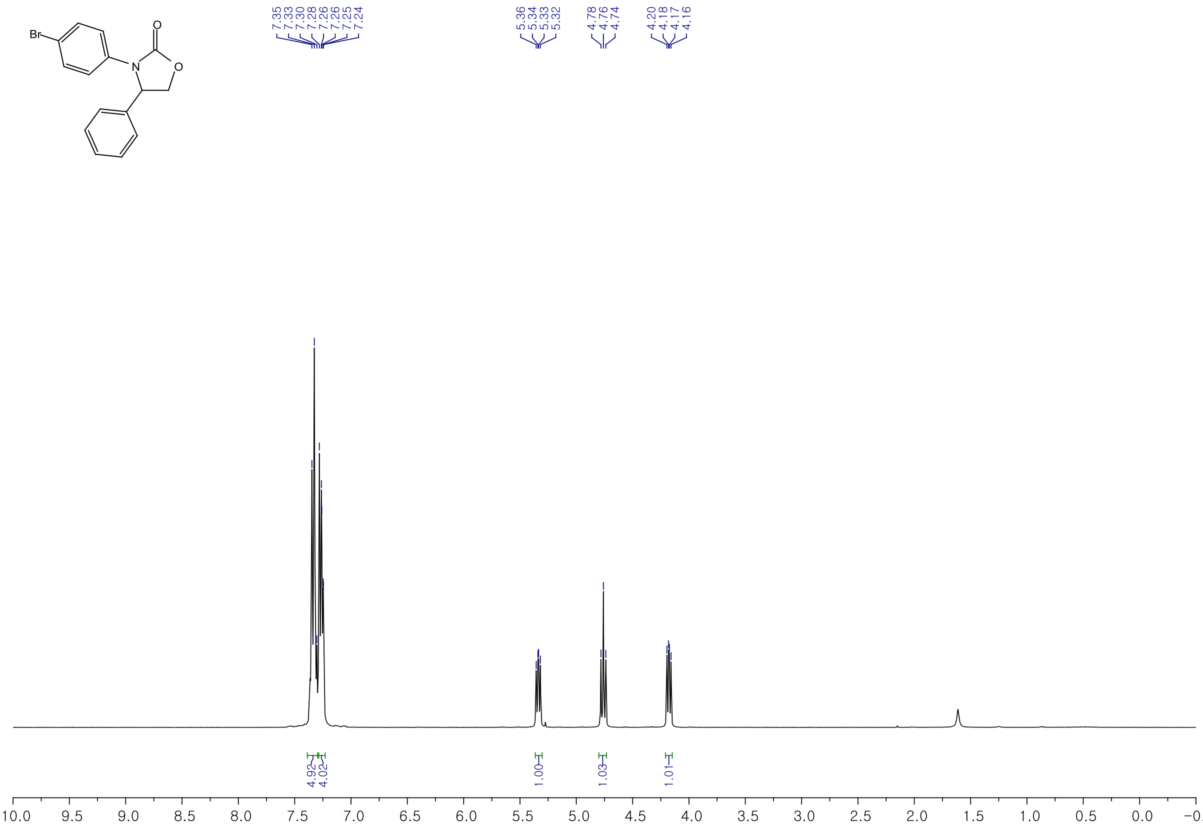
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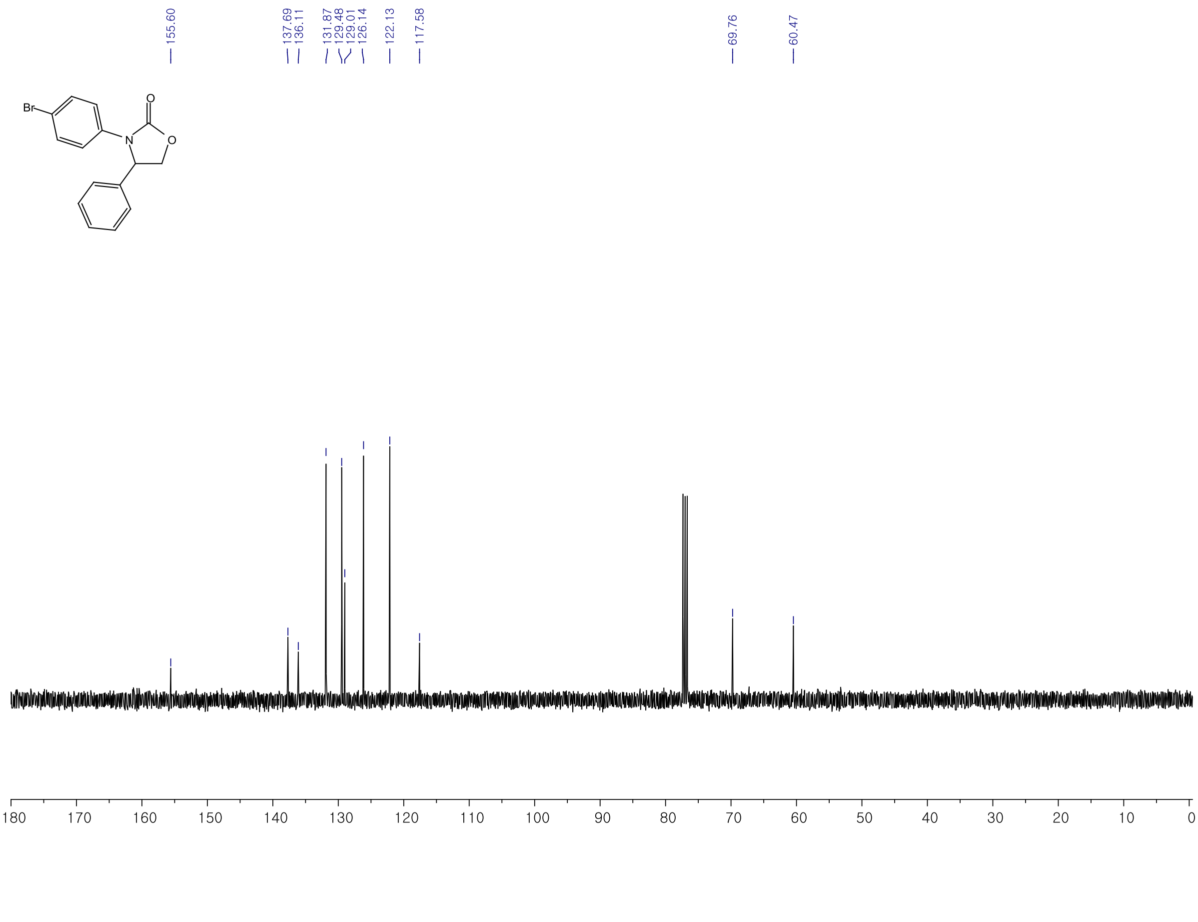
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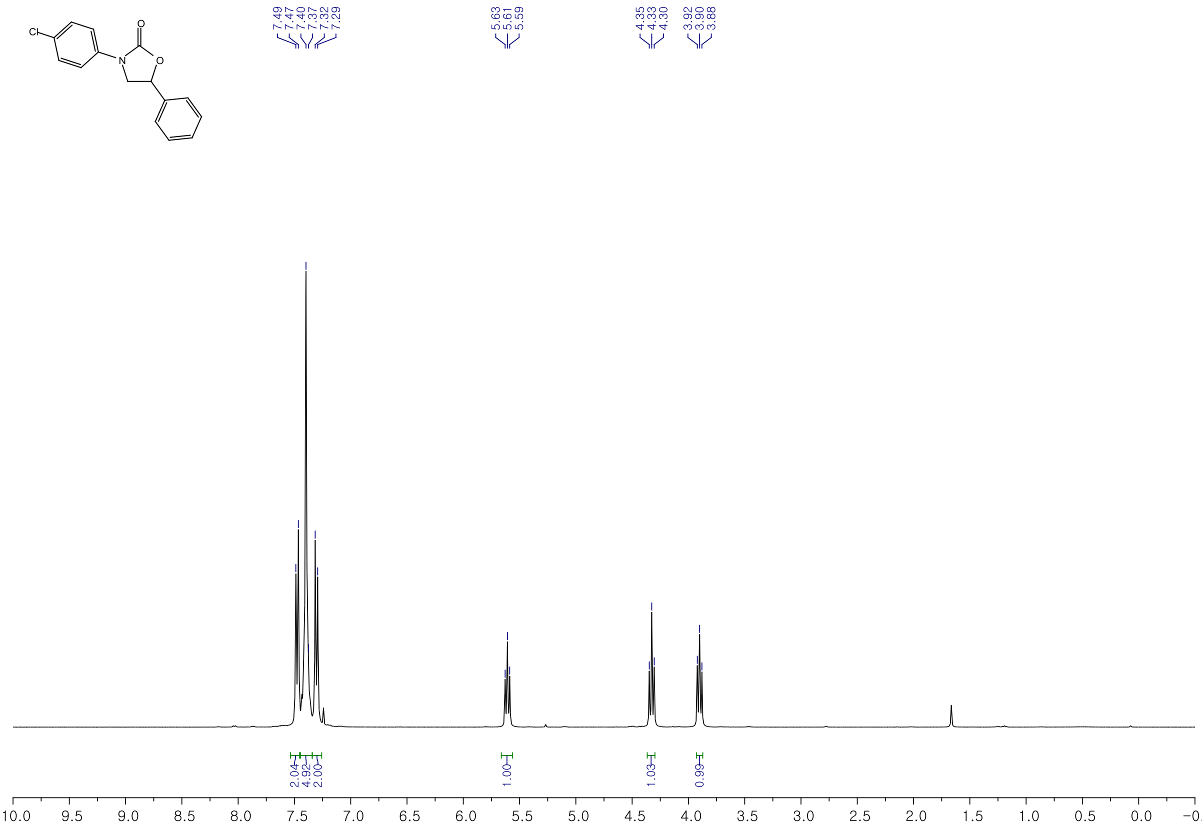
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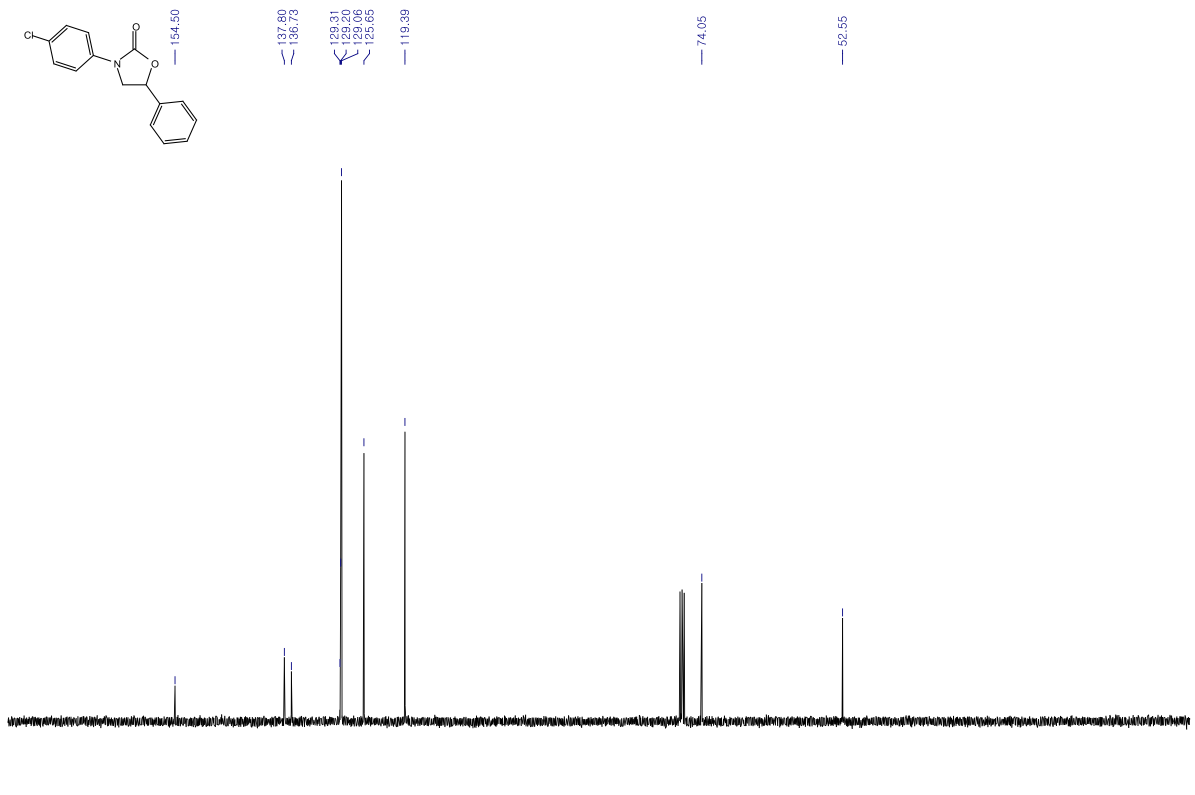
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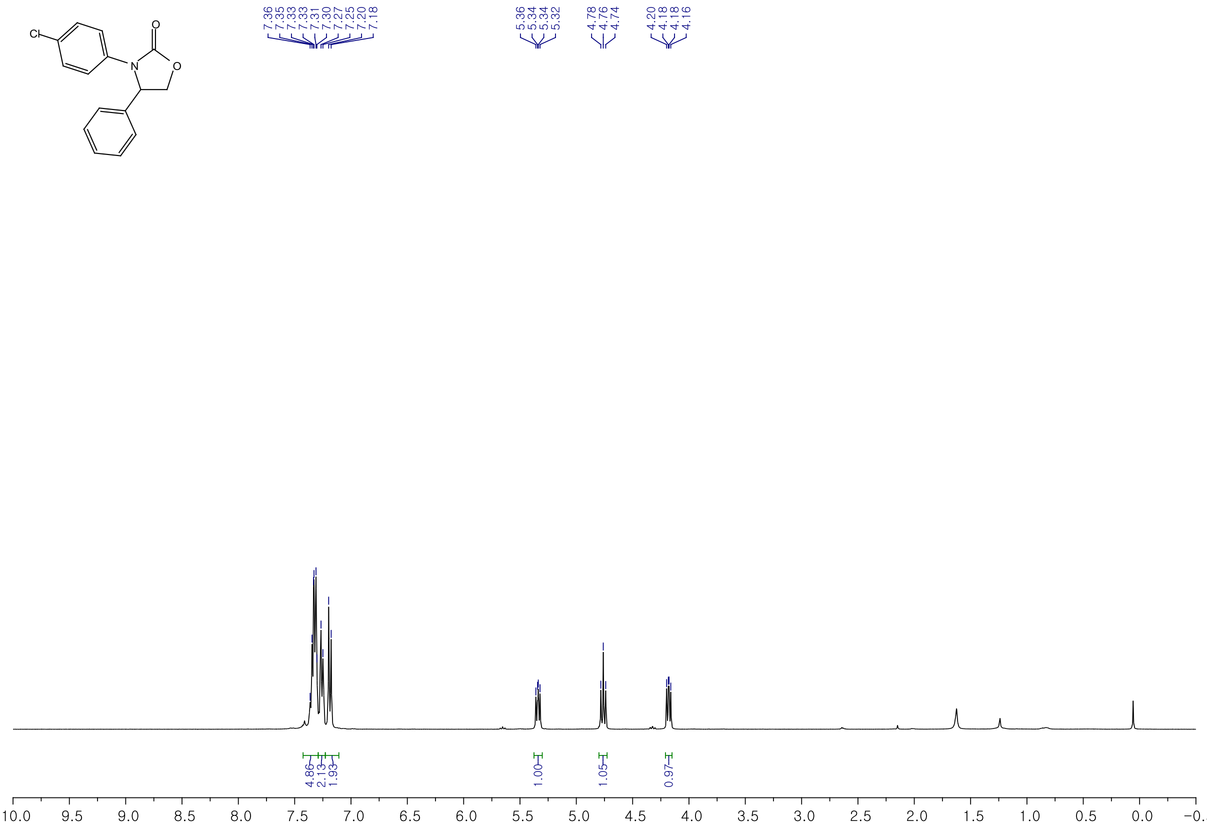
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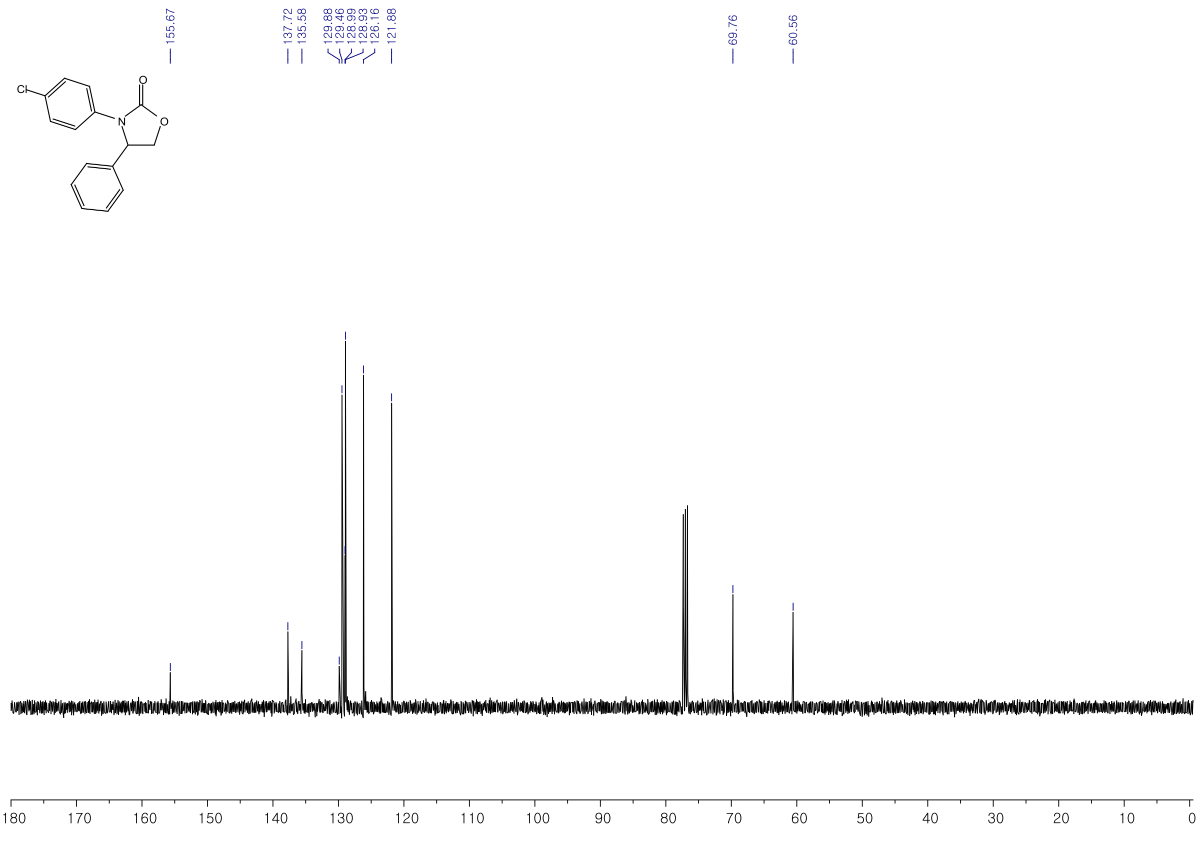
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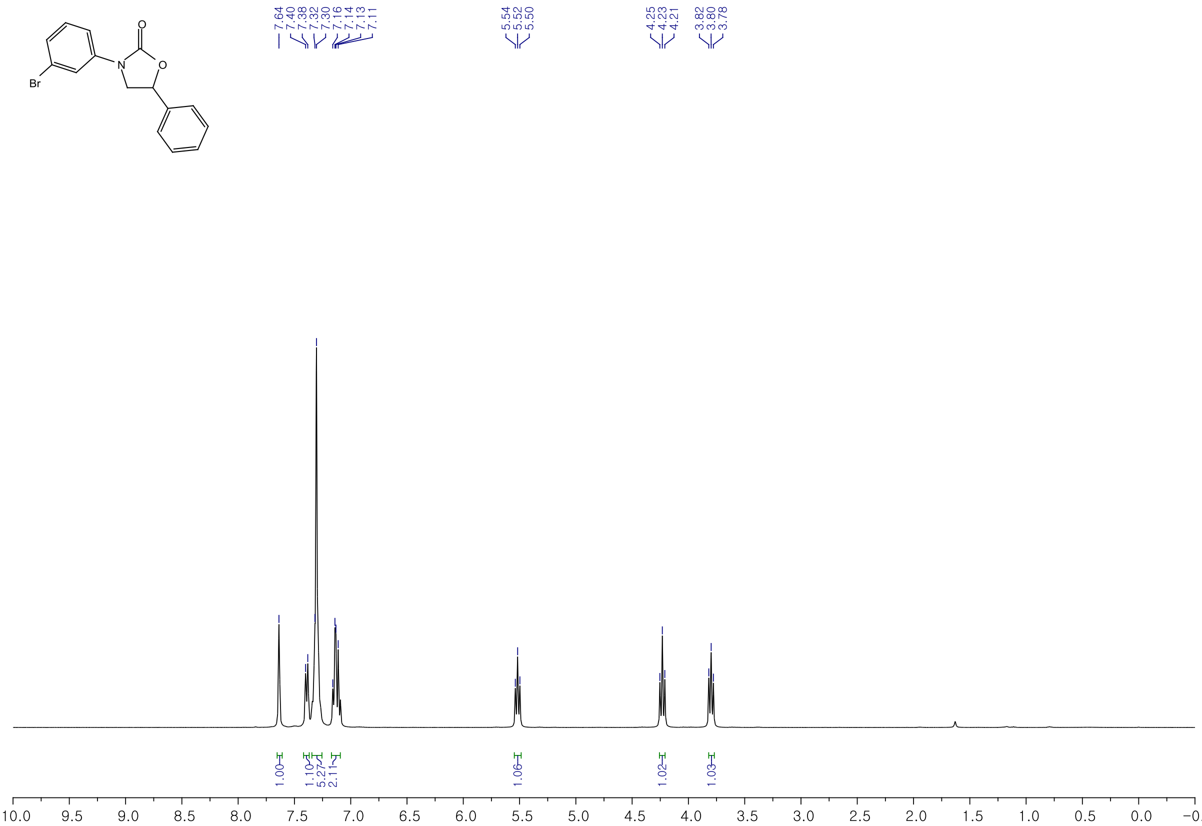

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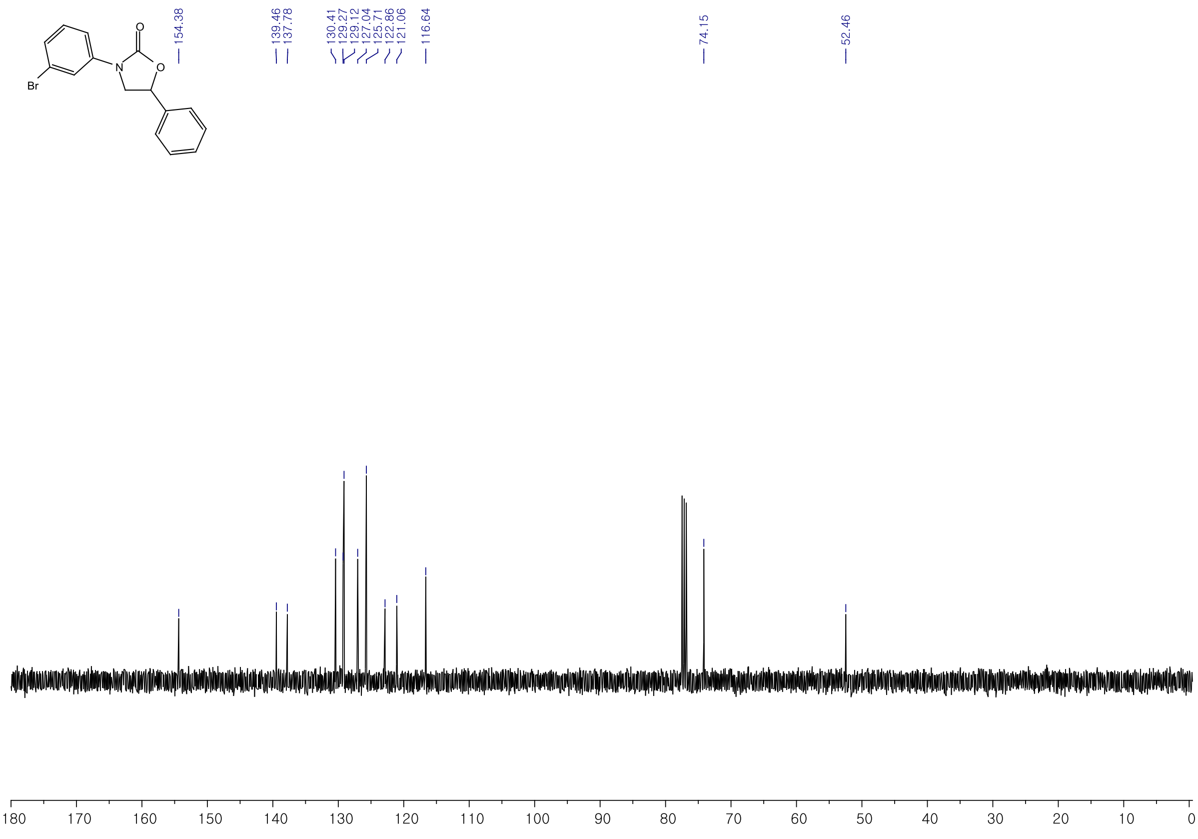

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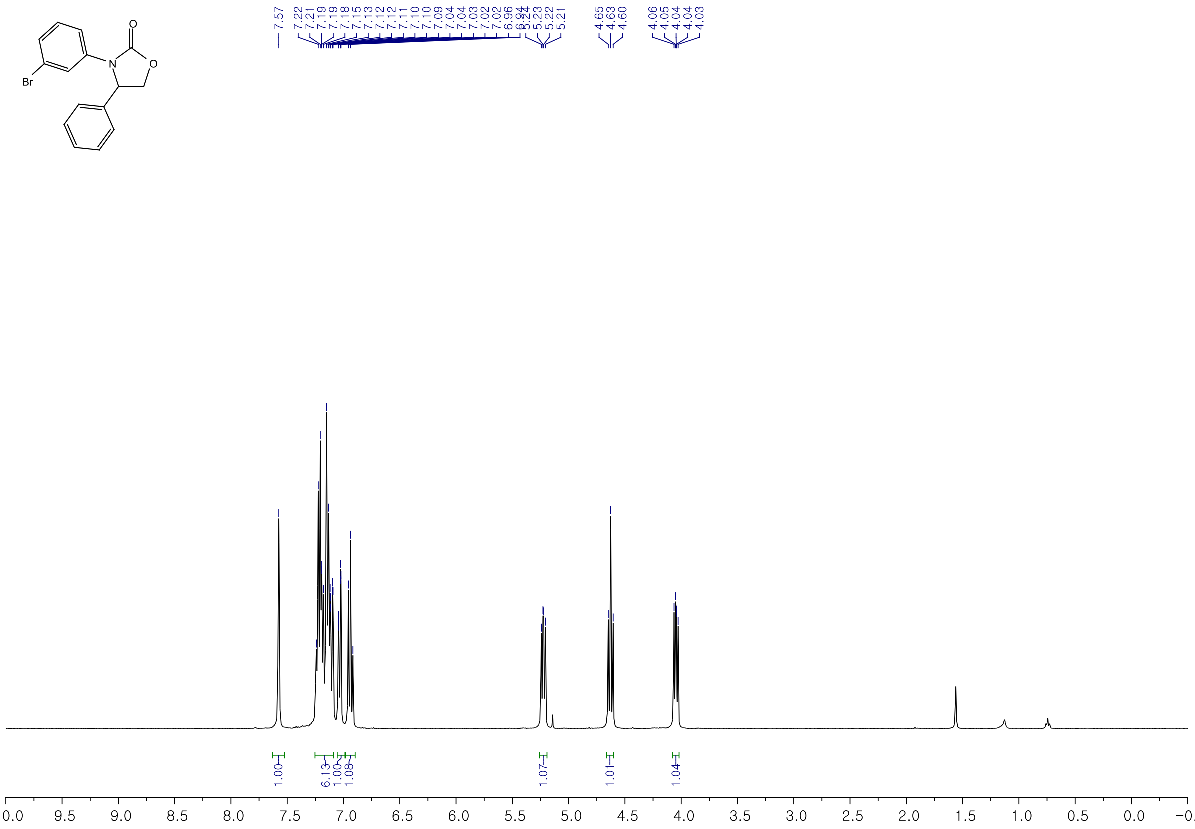
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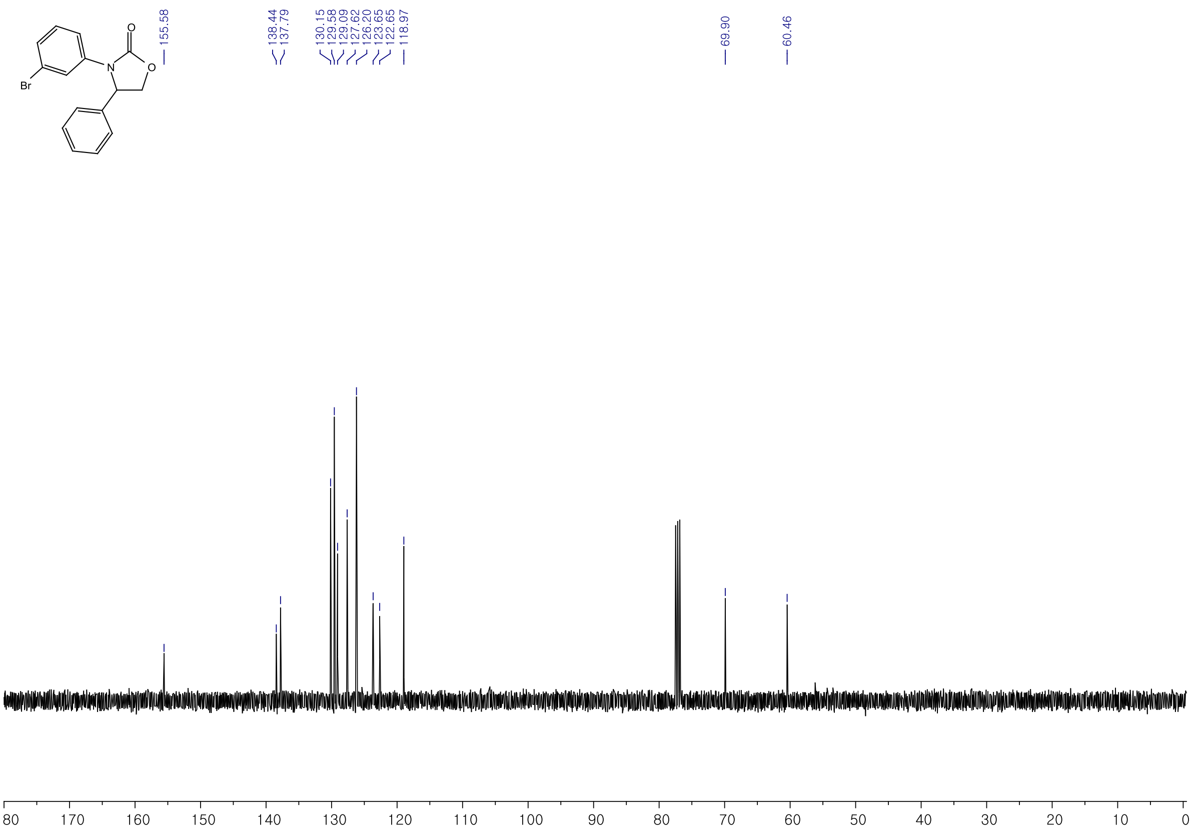
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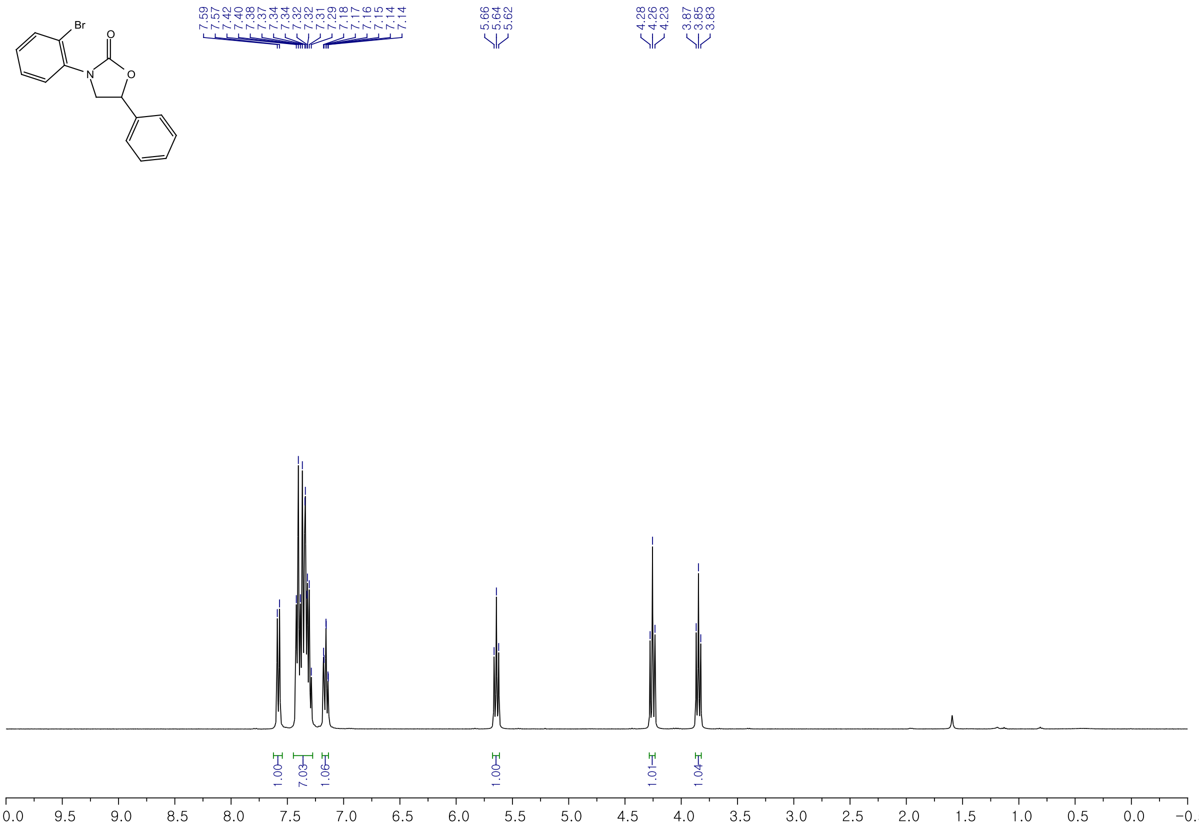
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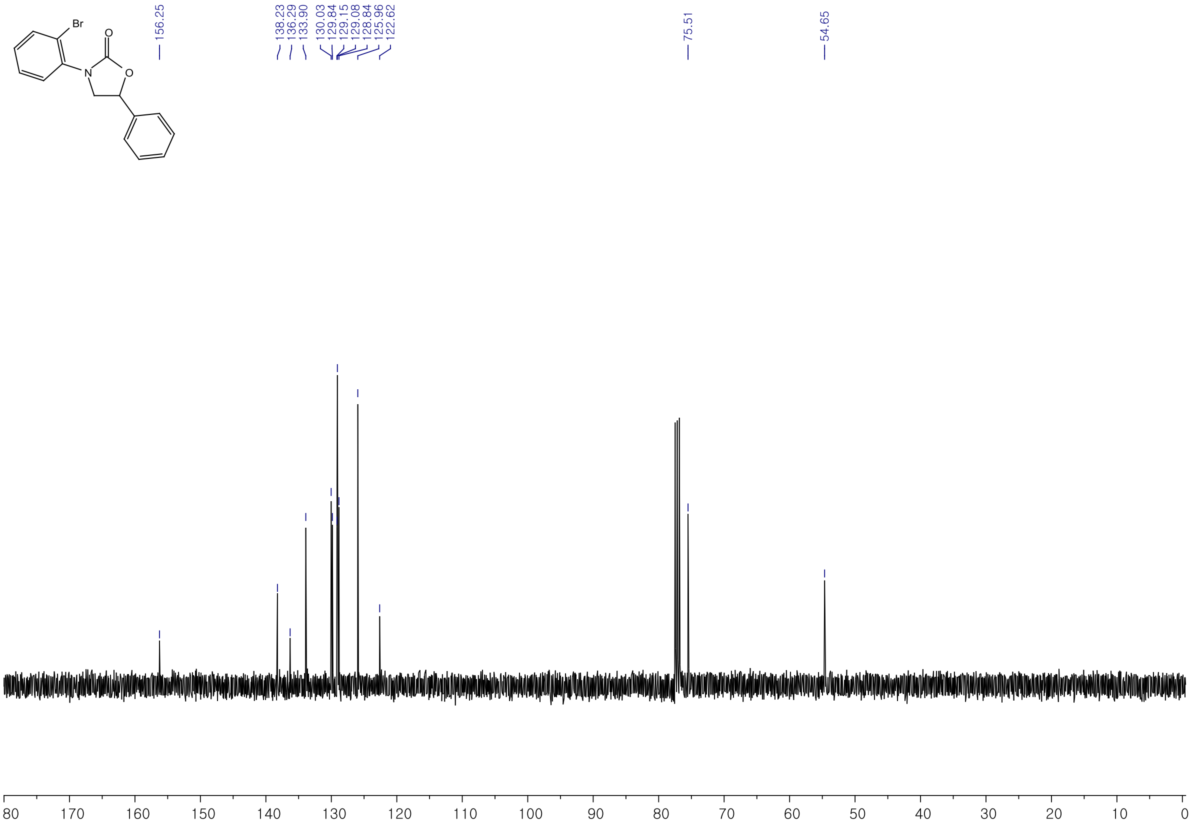
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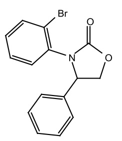
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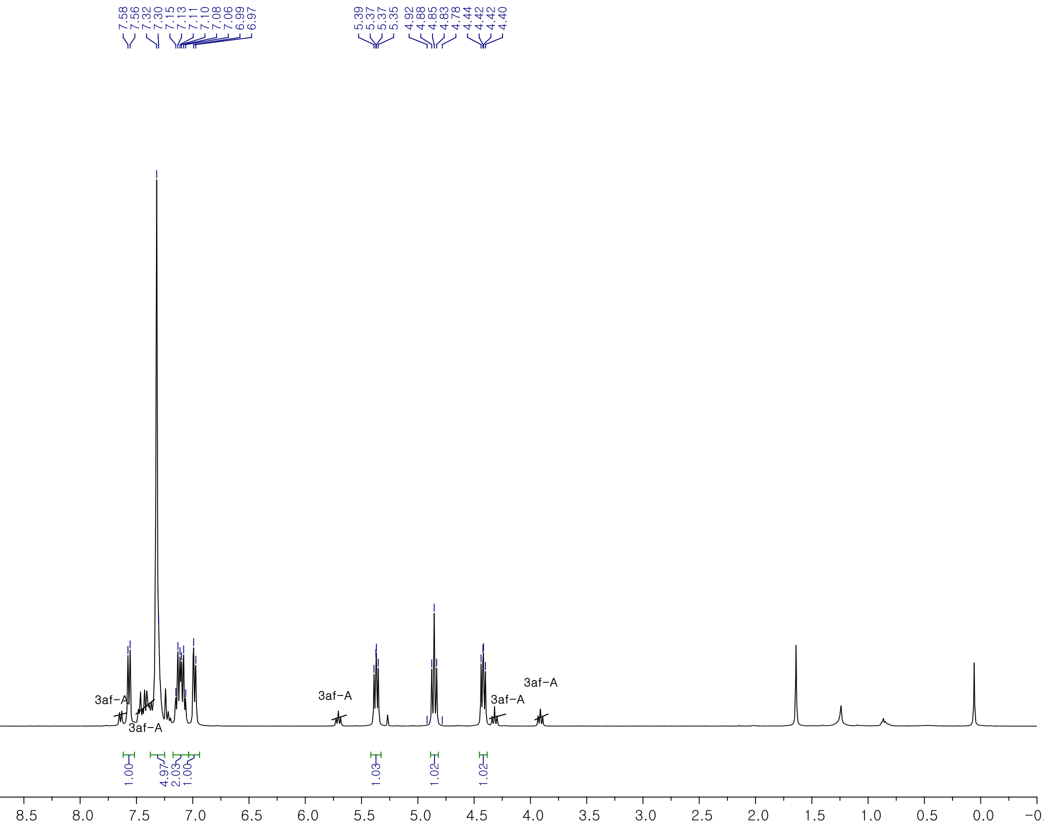
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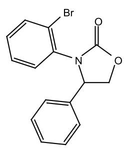
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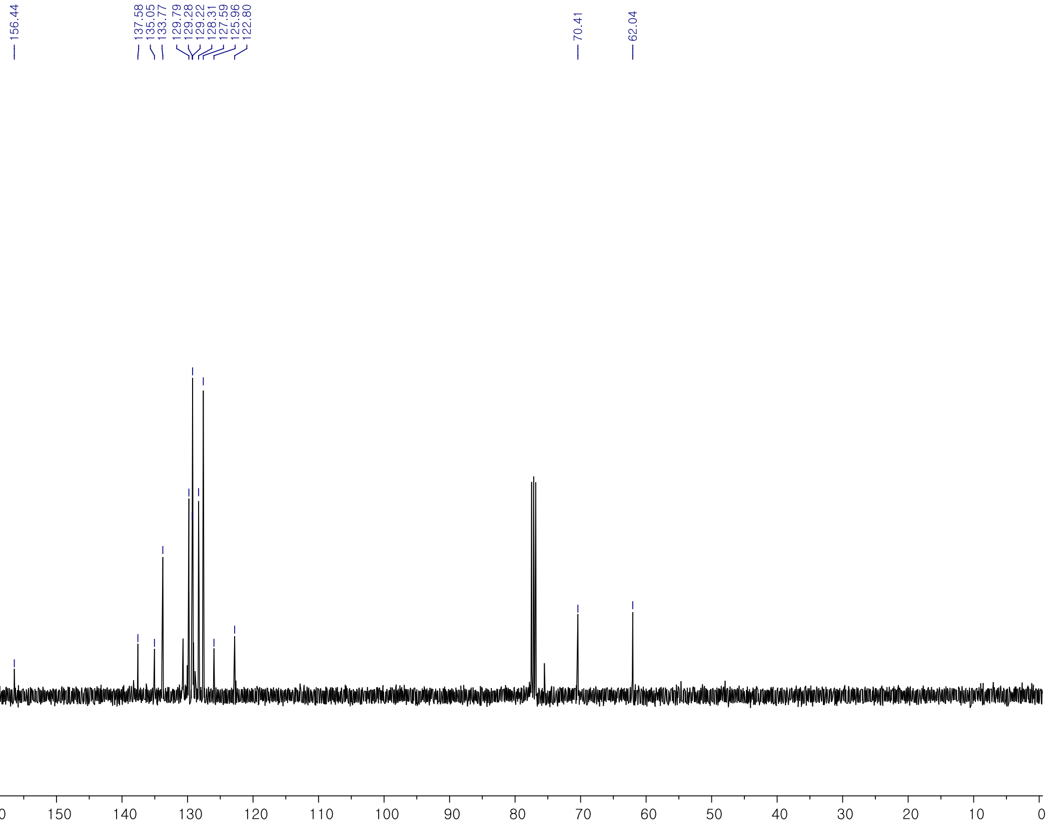
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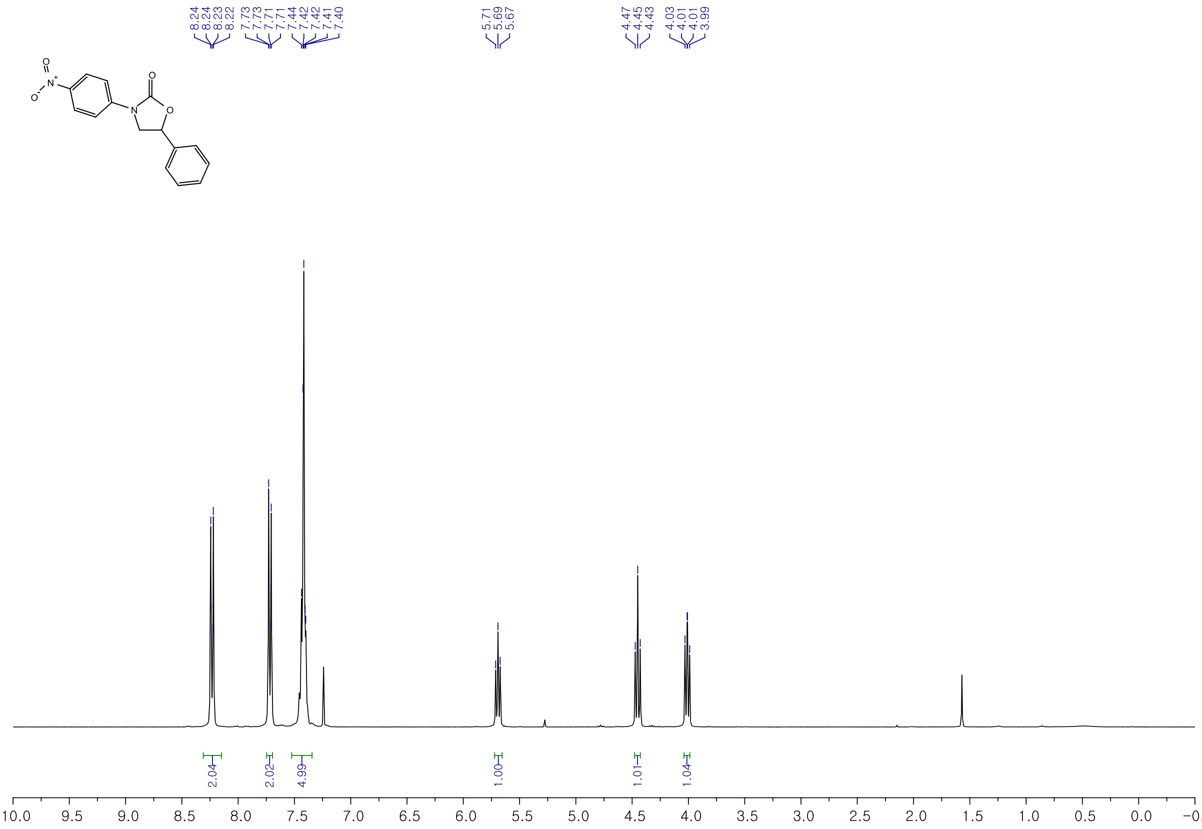
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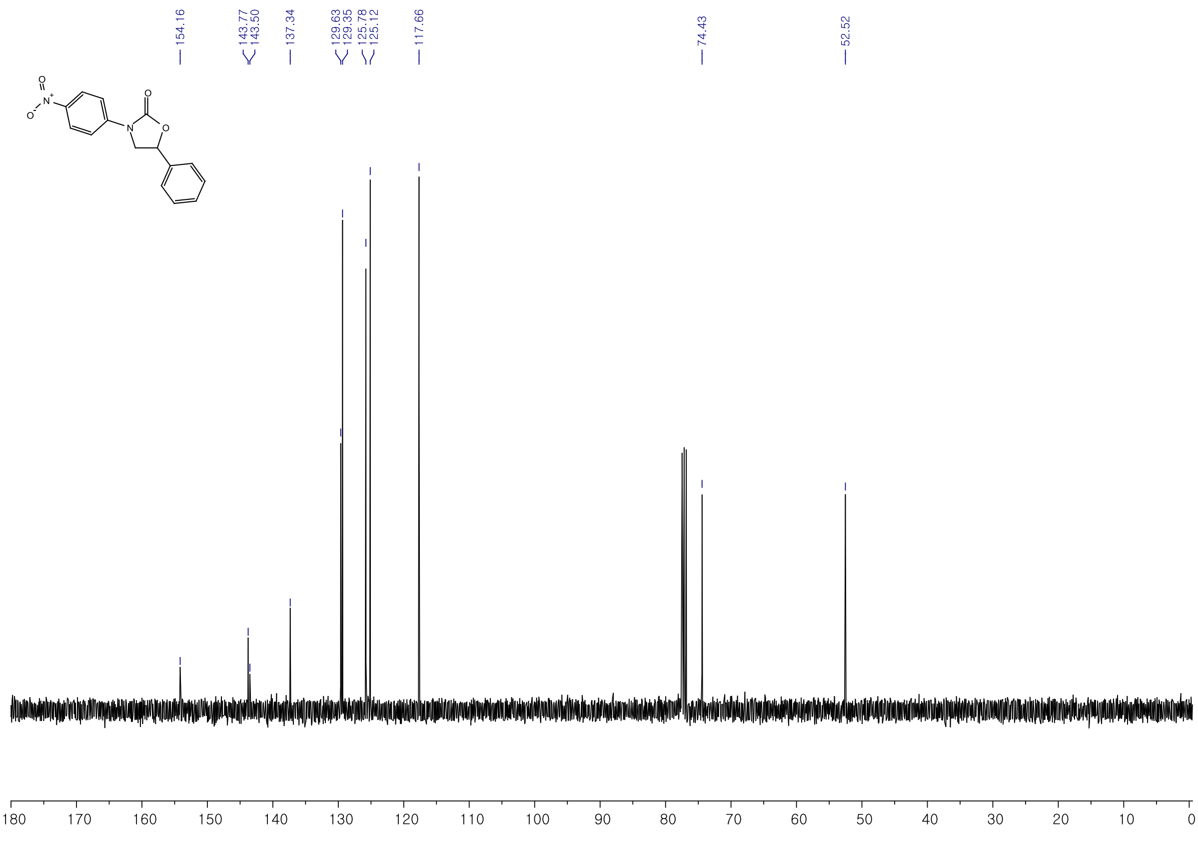
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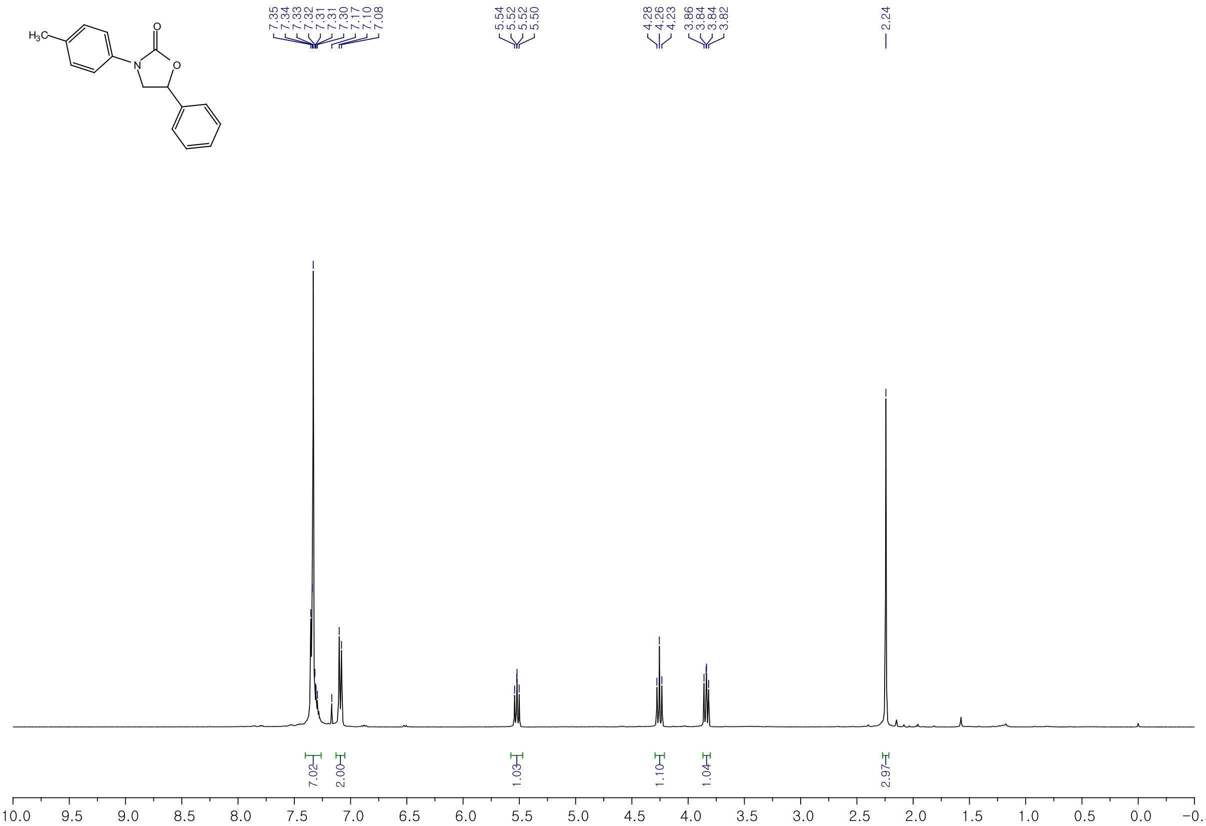
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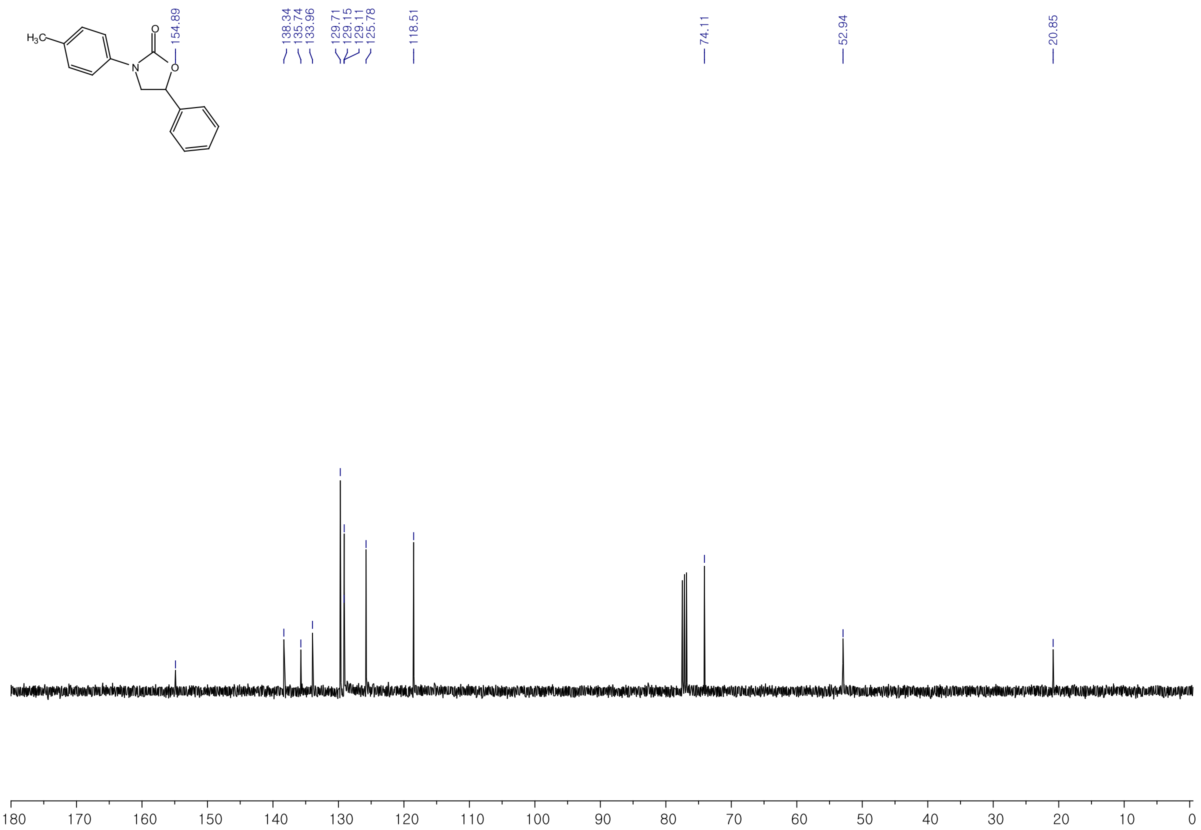
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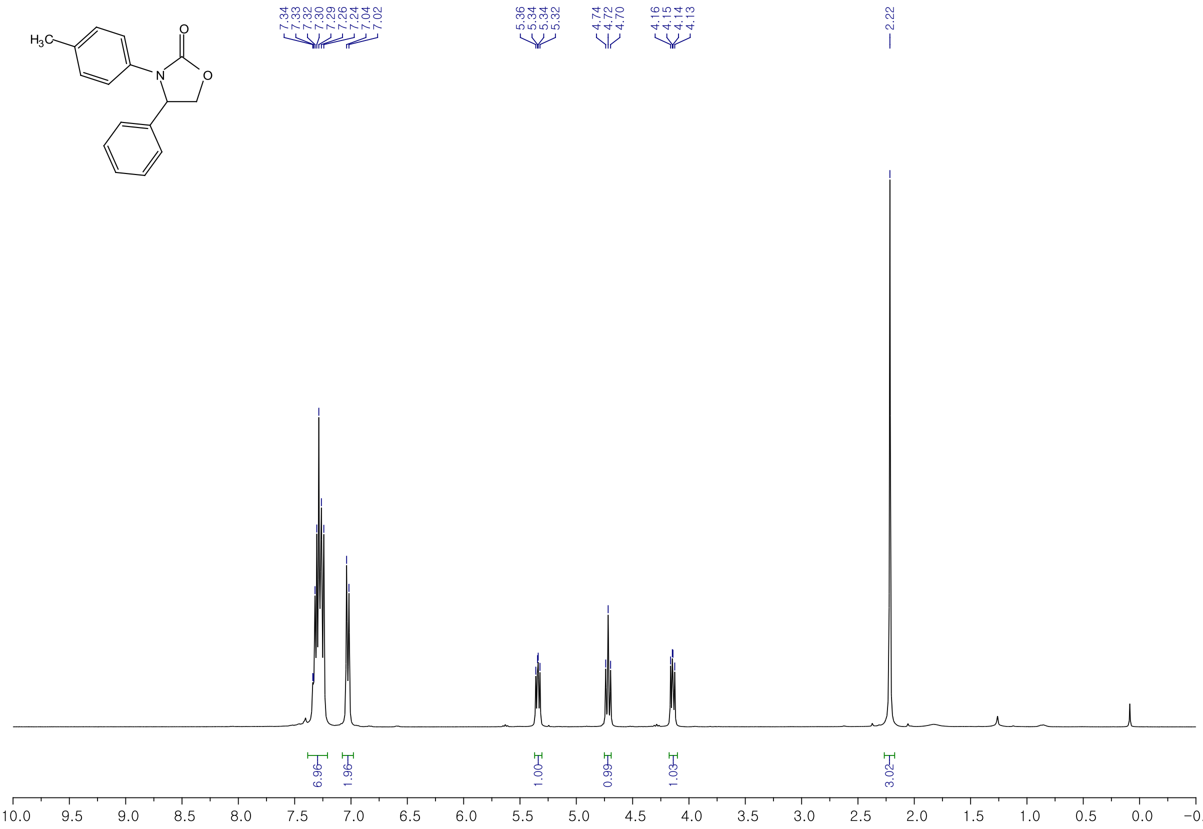

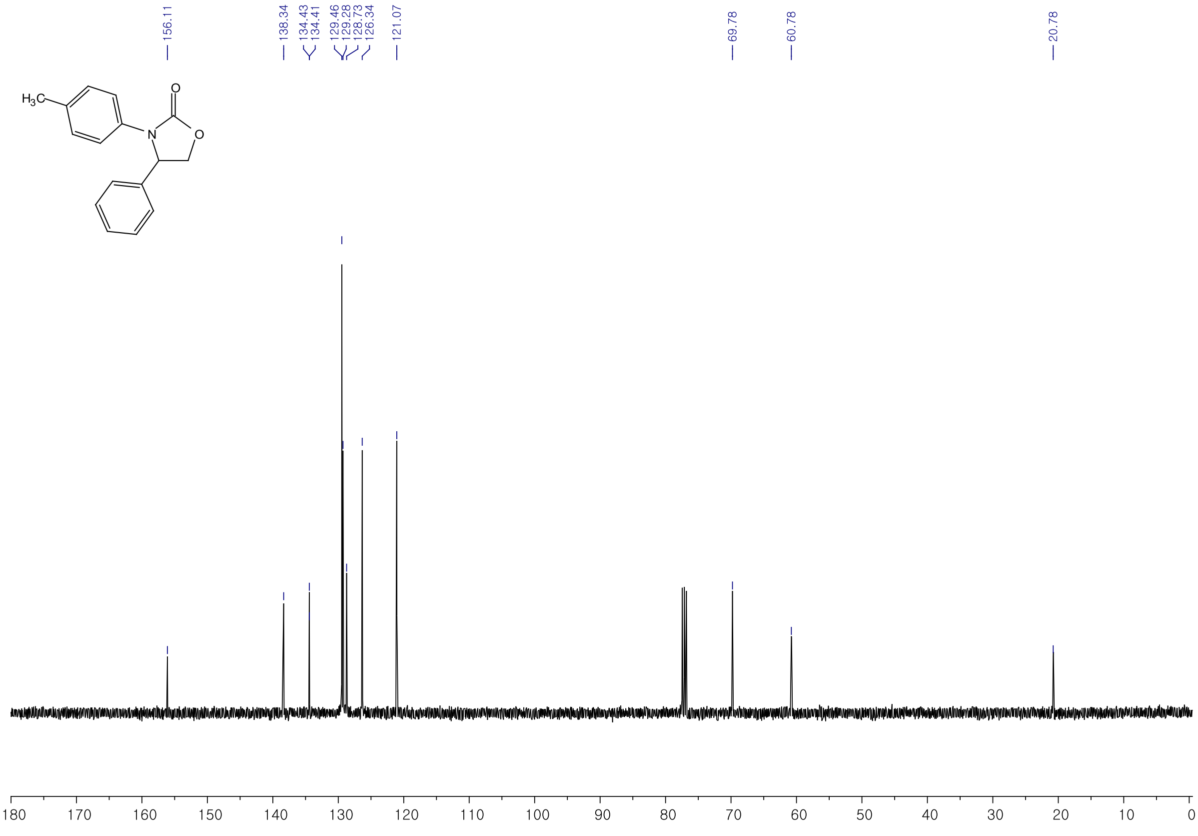

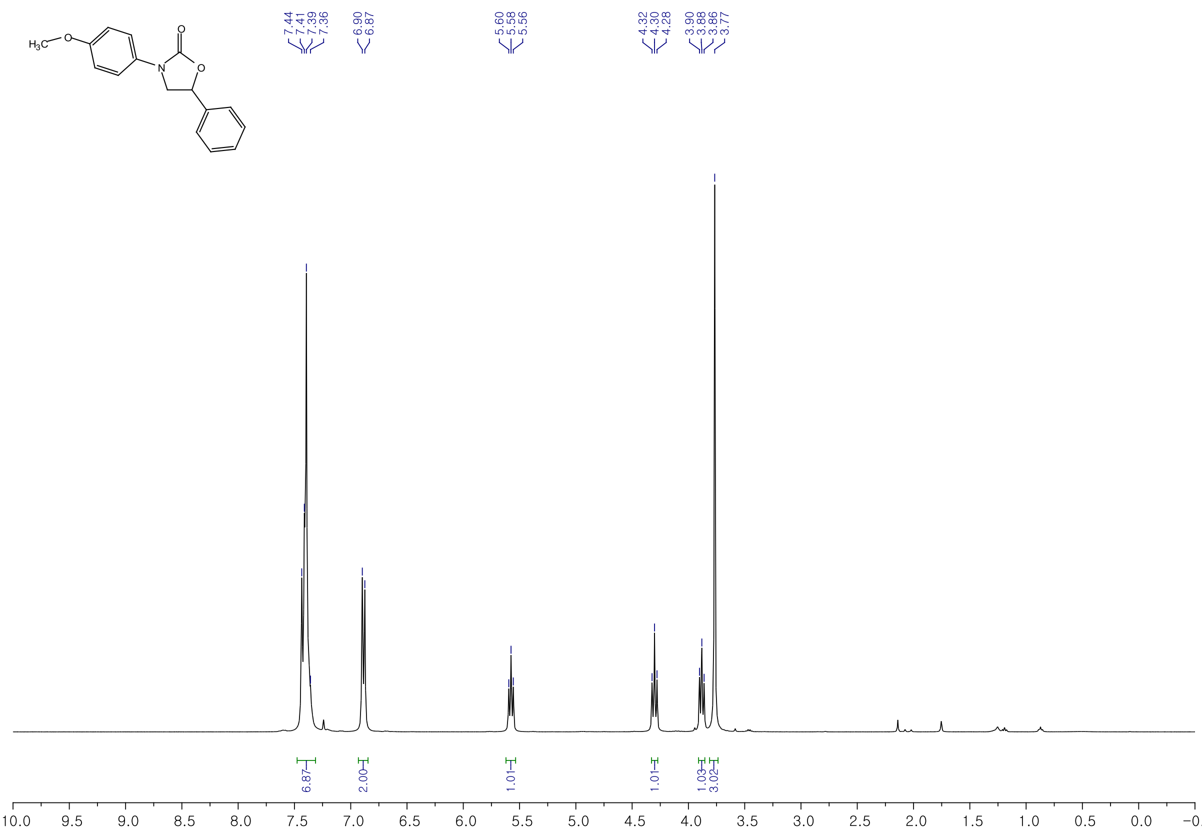
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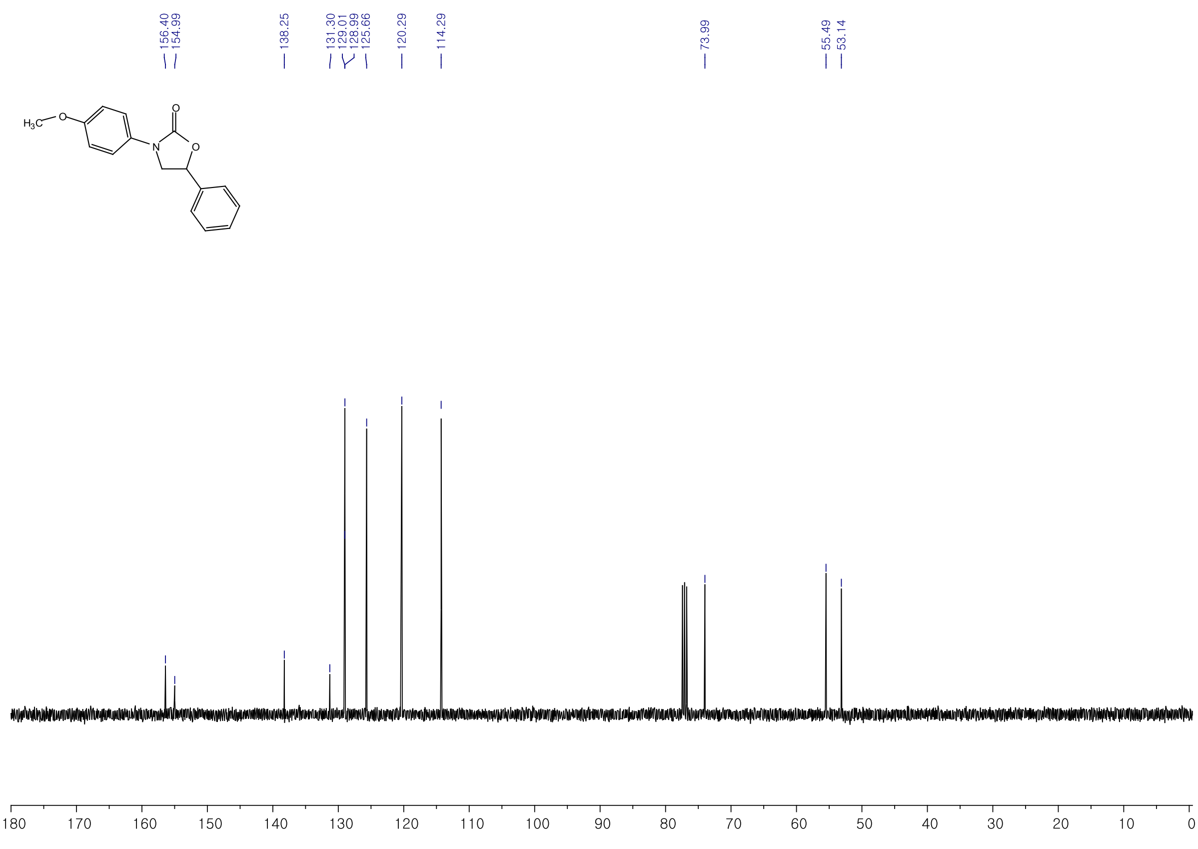
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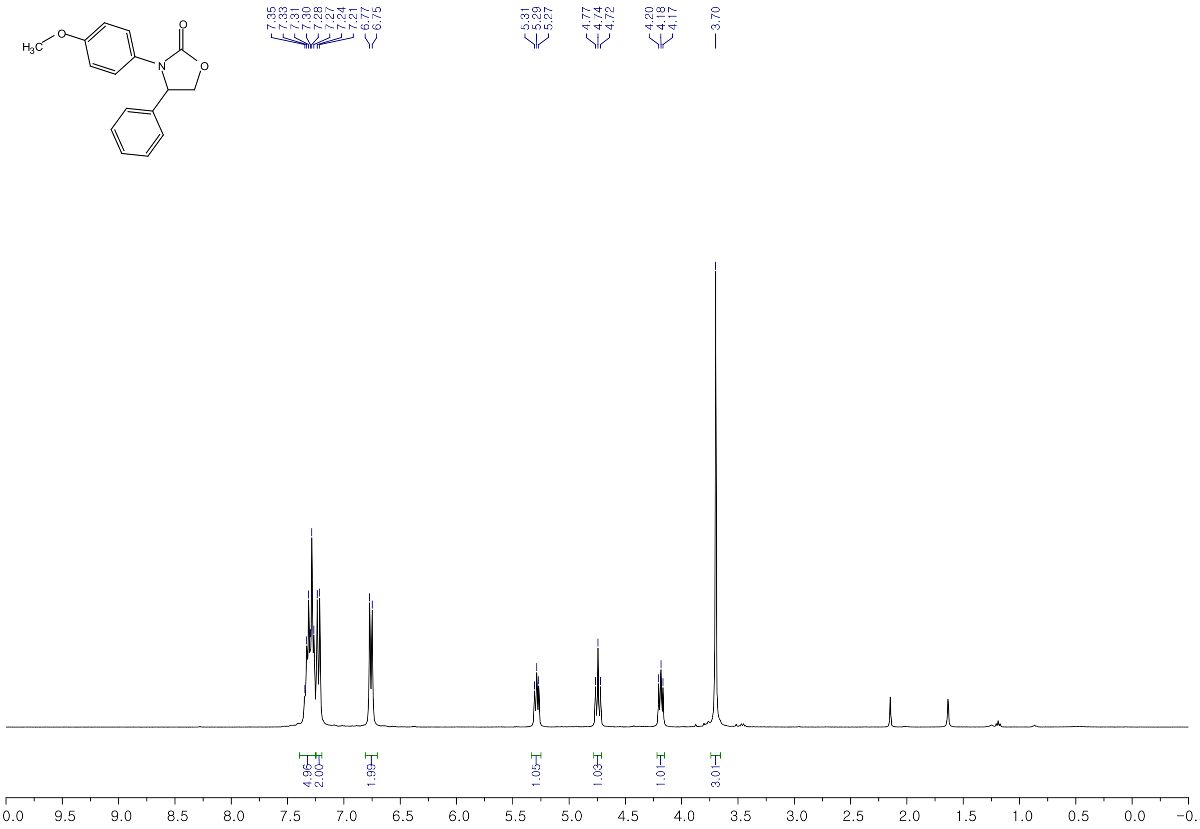

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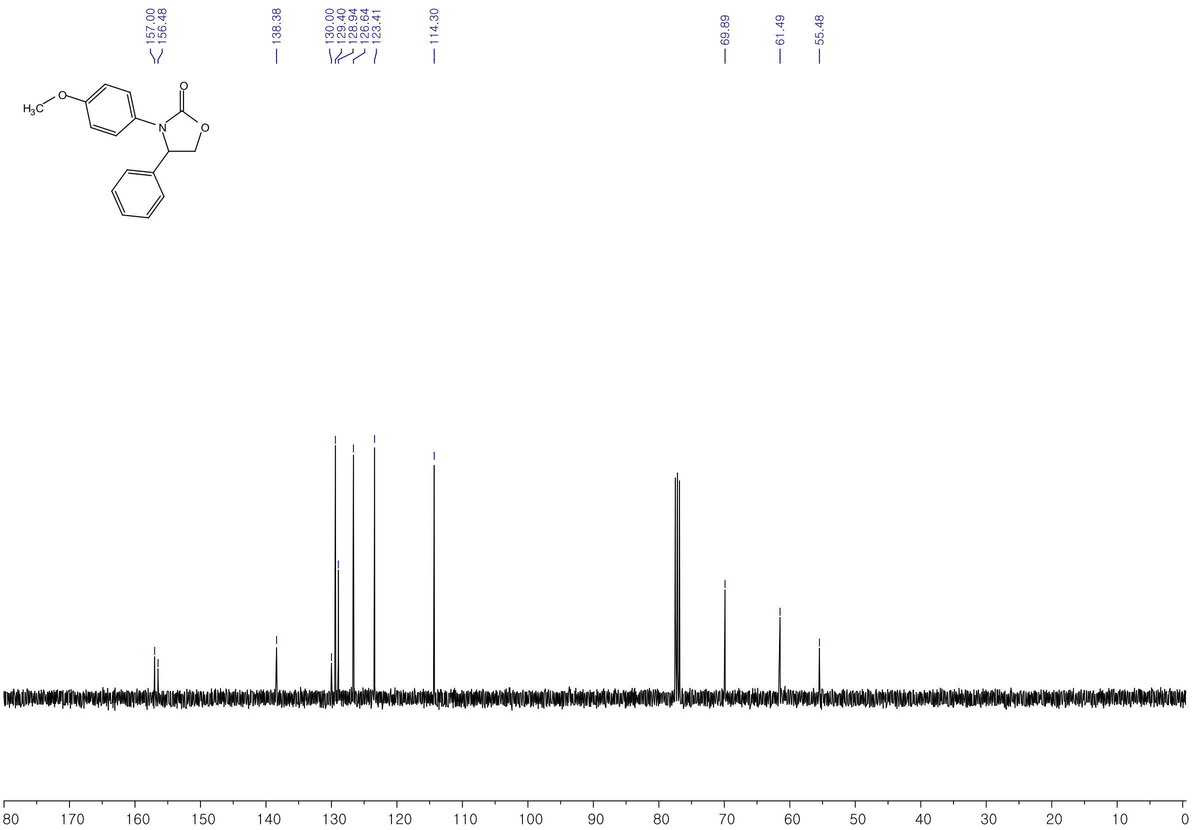

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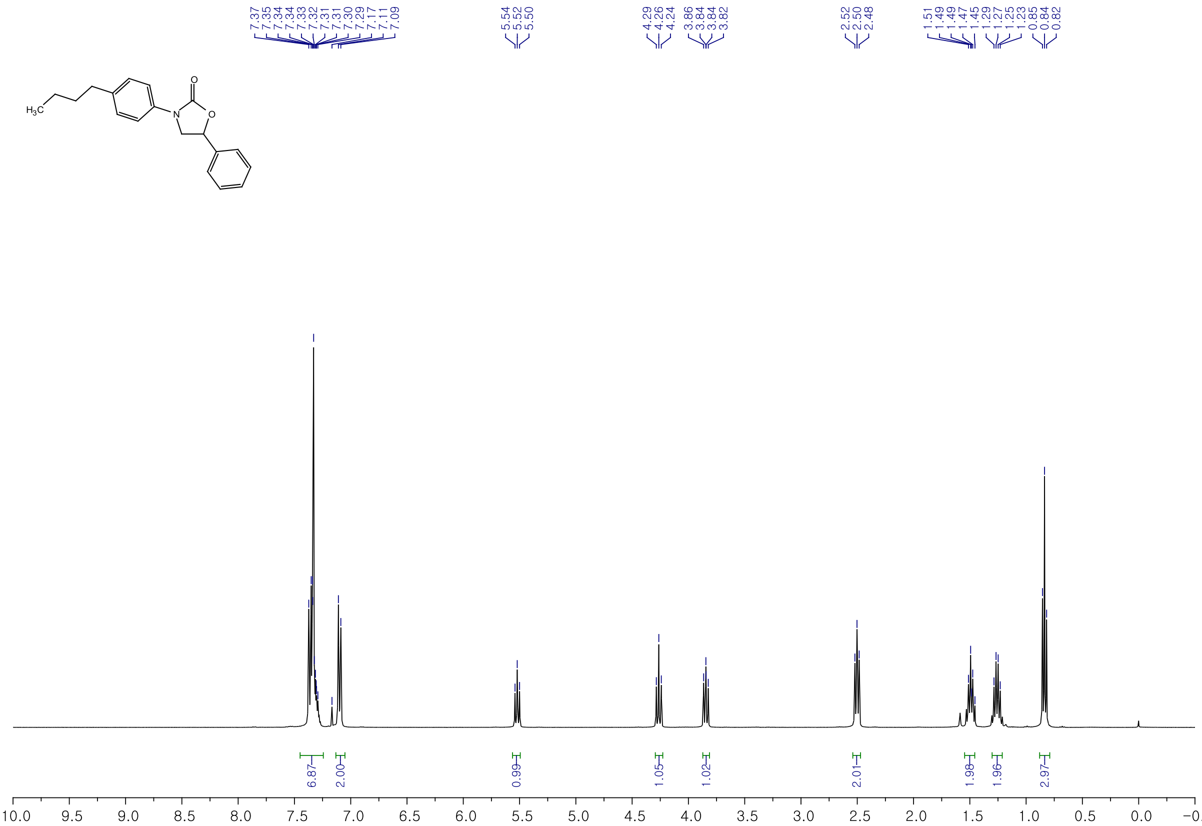

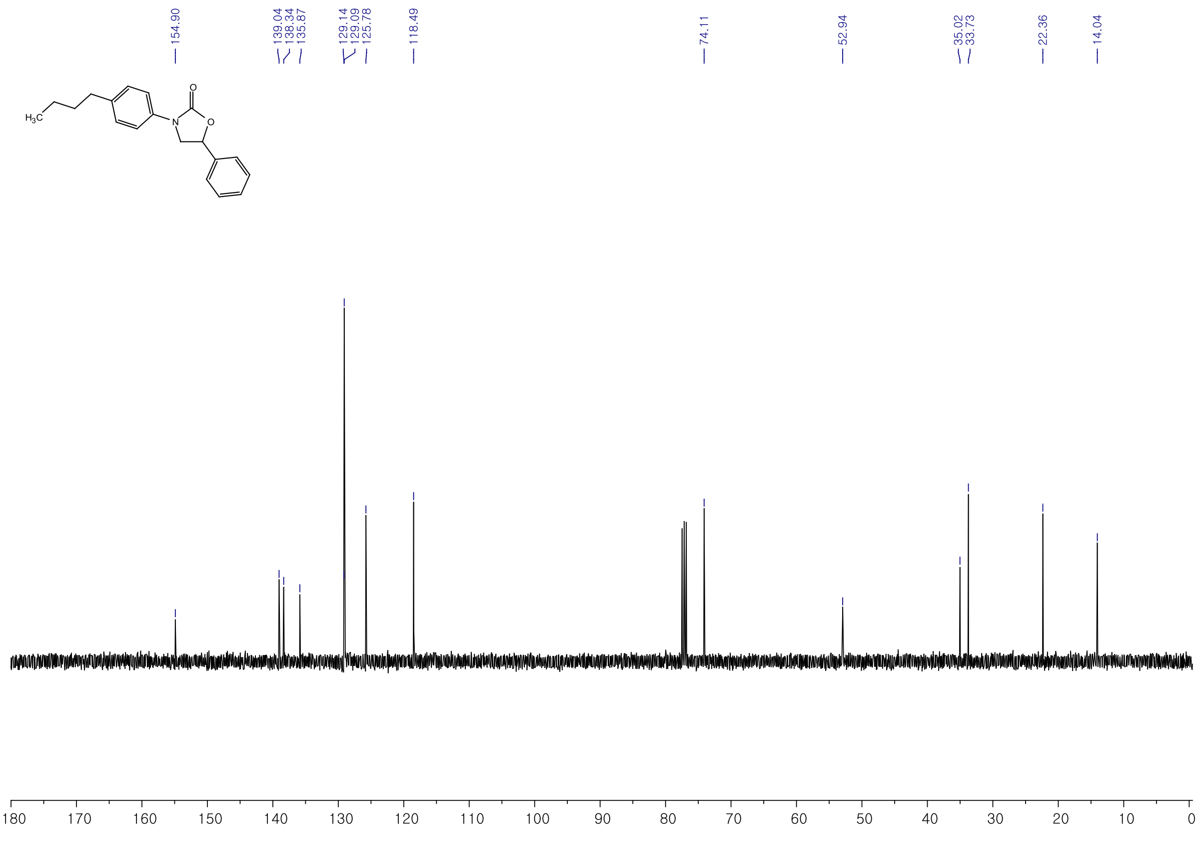

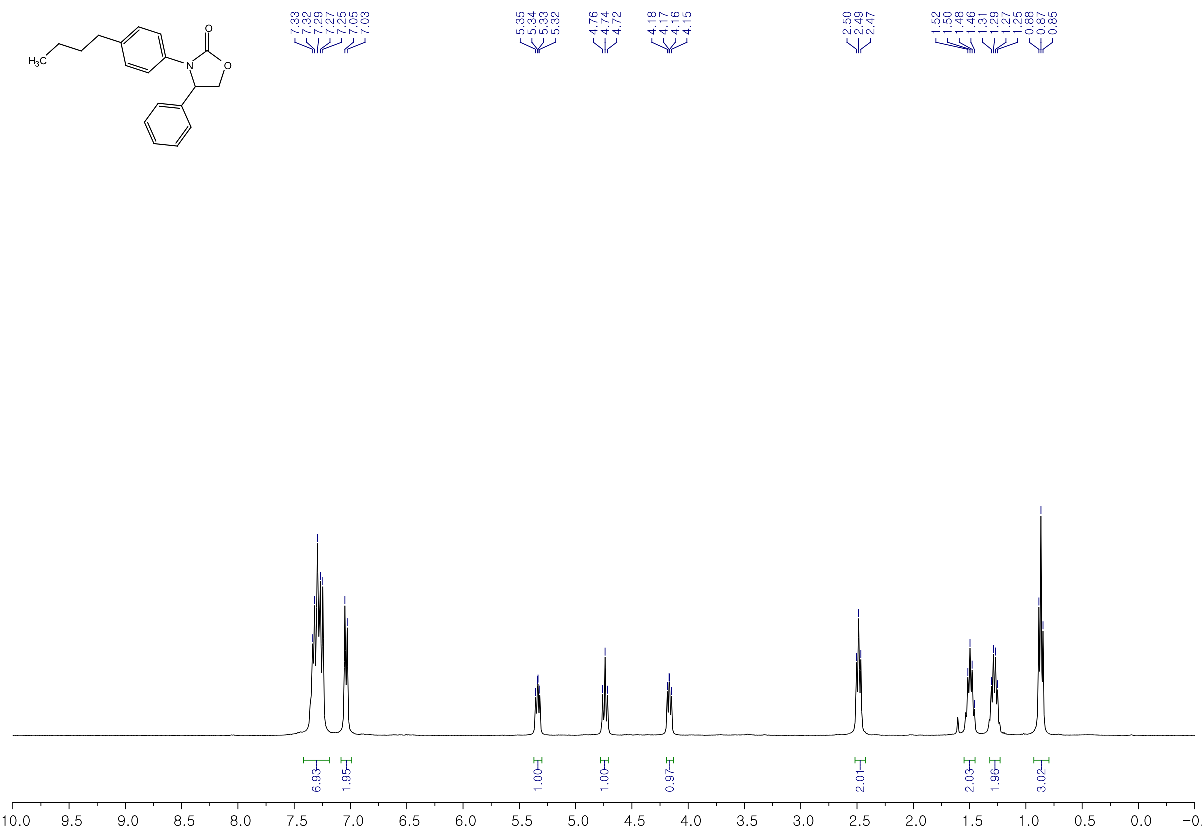

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4.17
4.16
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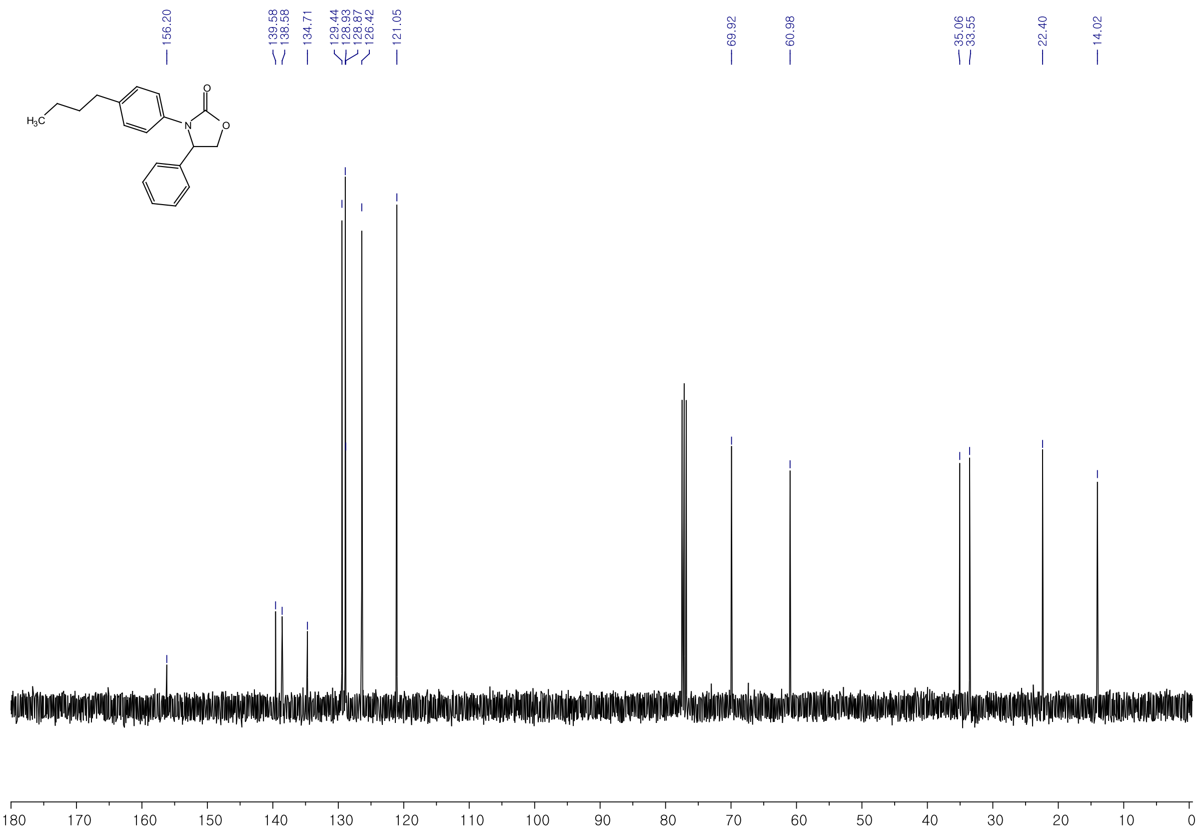
3.02



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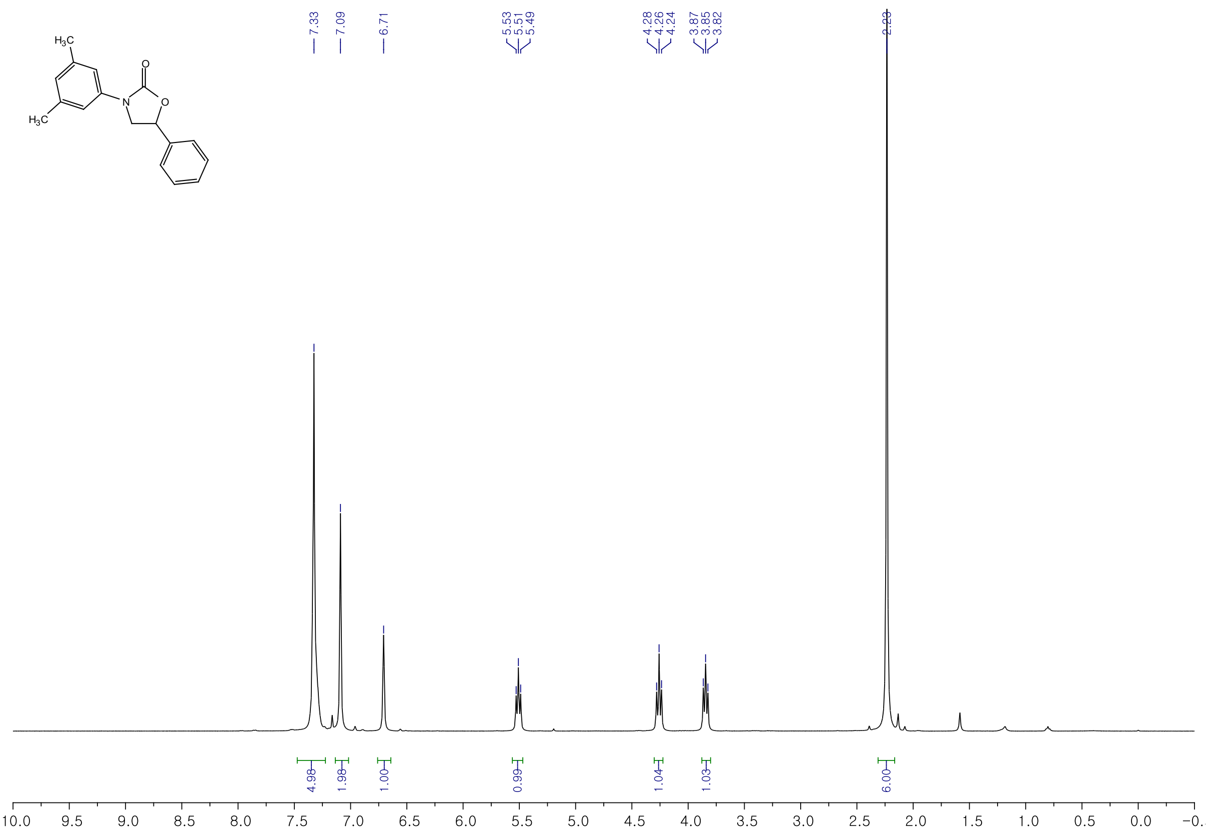

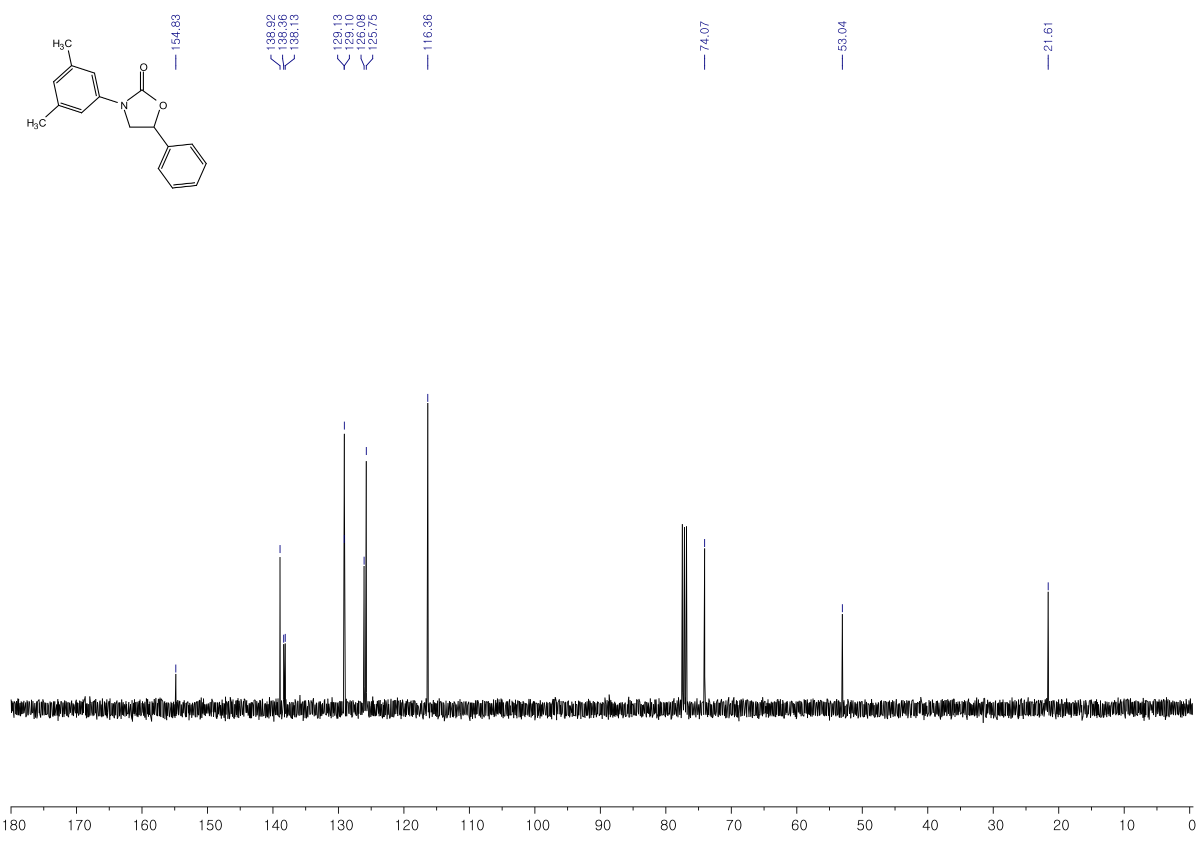

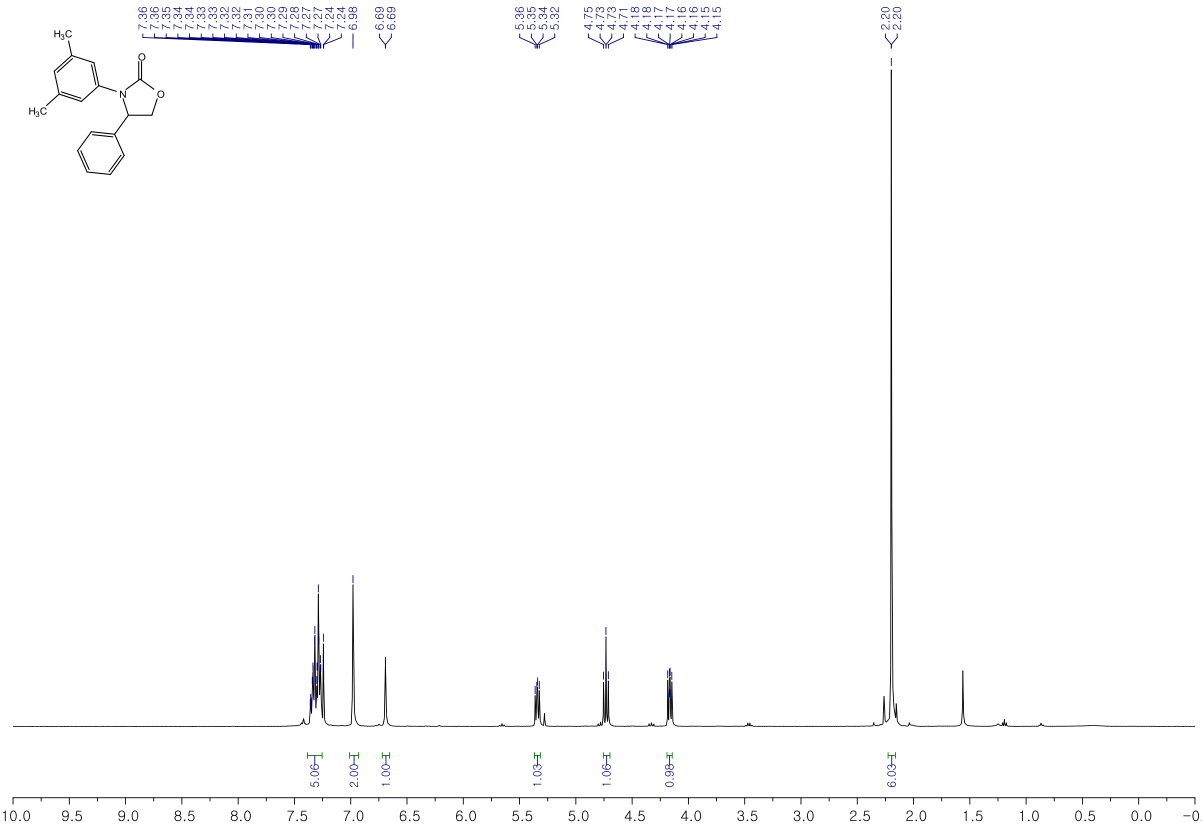

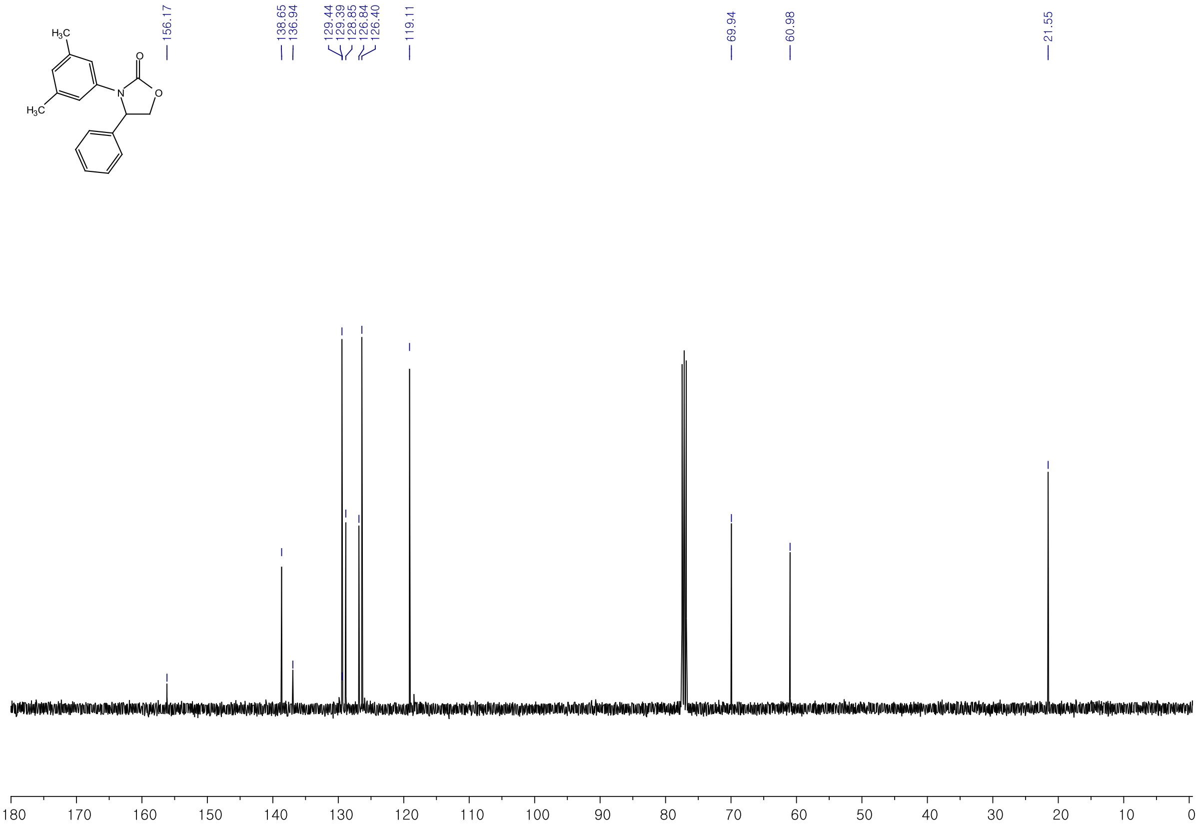

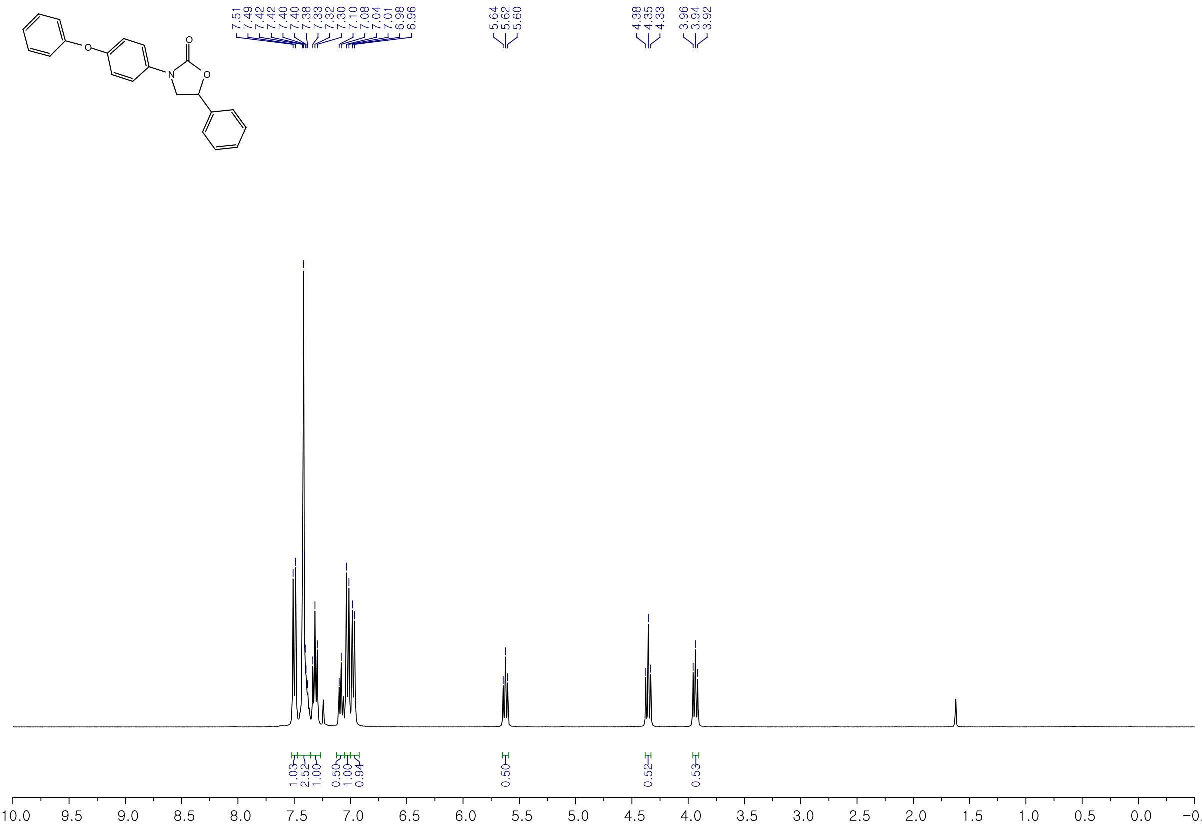
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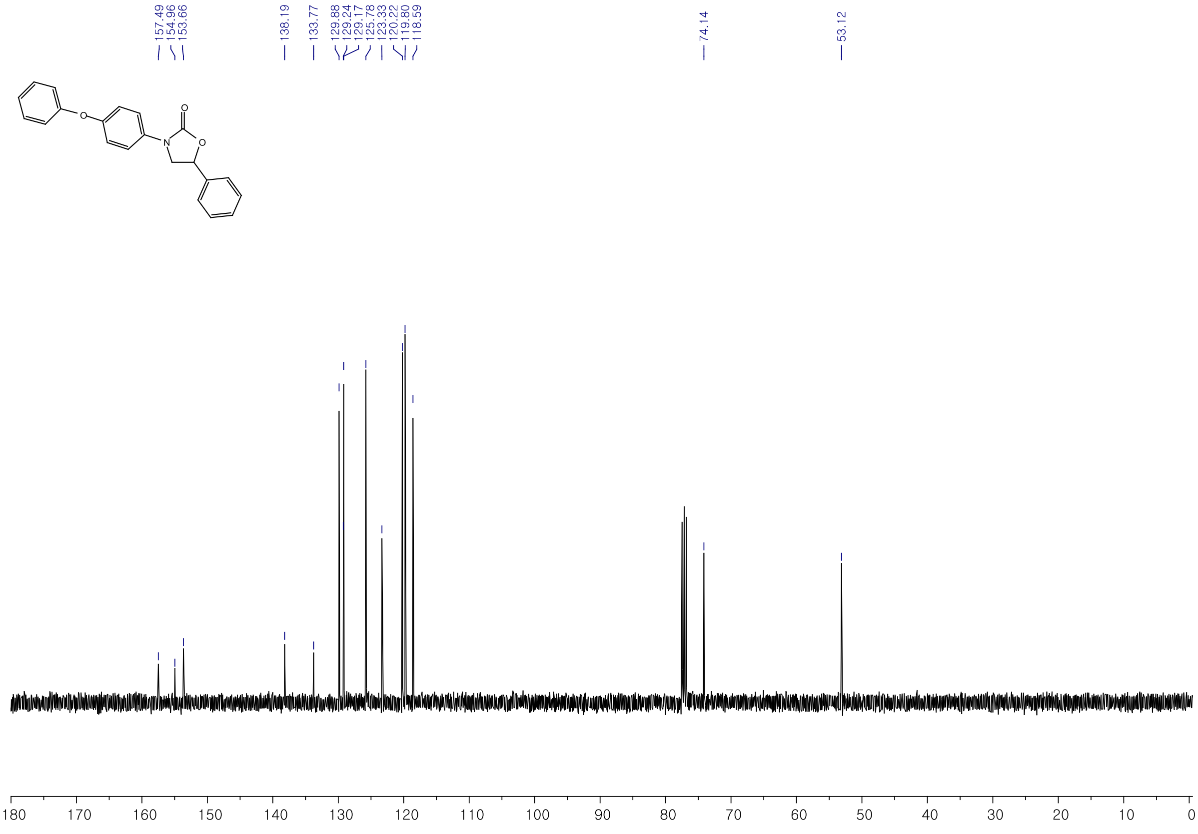
4.38 4.35 4.33 3.96 3.94 3.92
1.03 2.52 1.00 0.50 1.00 0.94 0.50 0.52 0.53
10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0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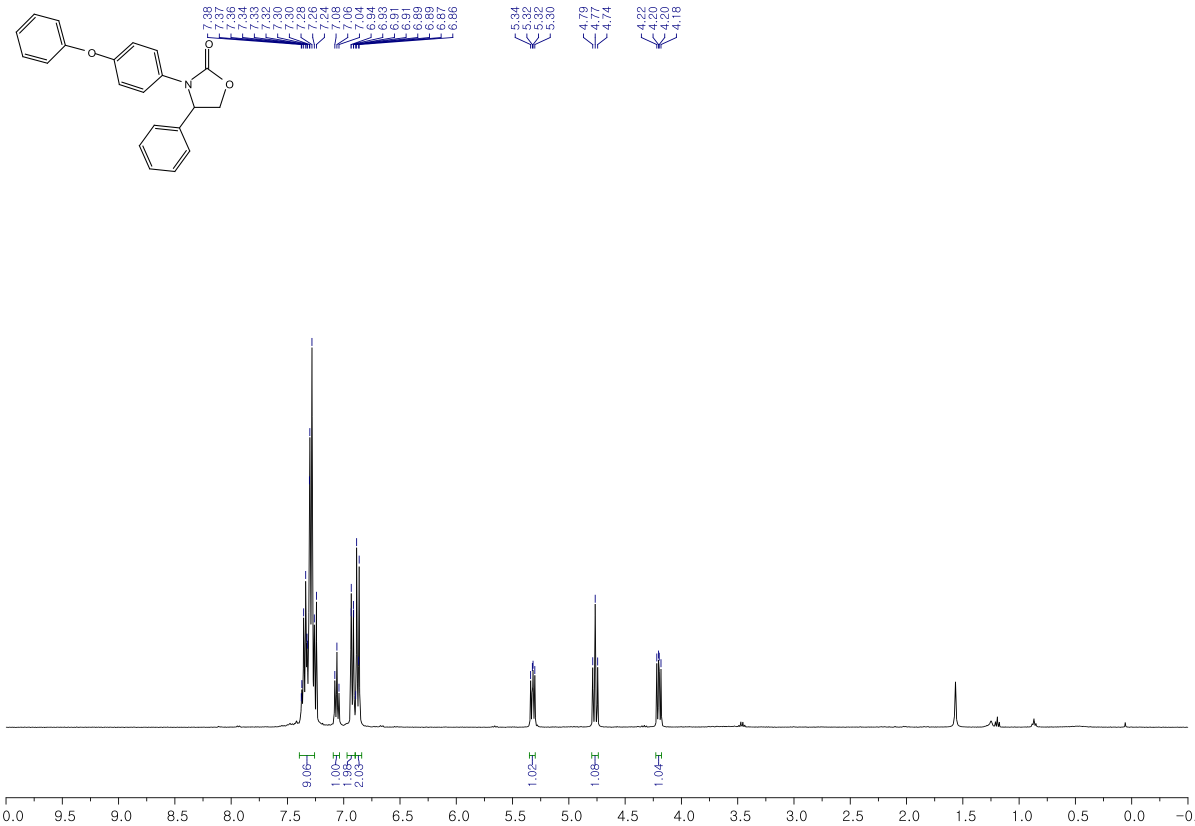

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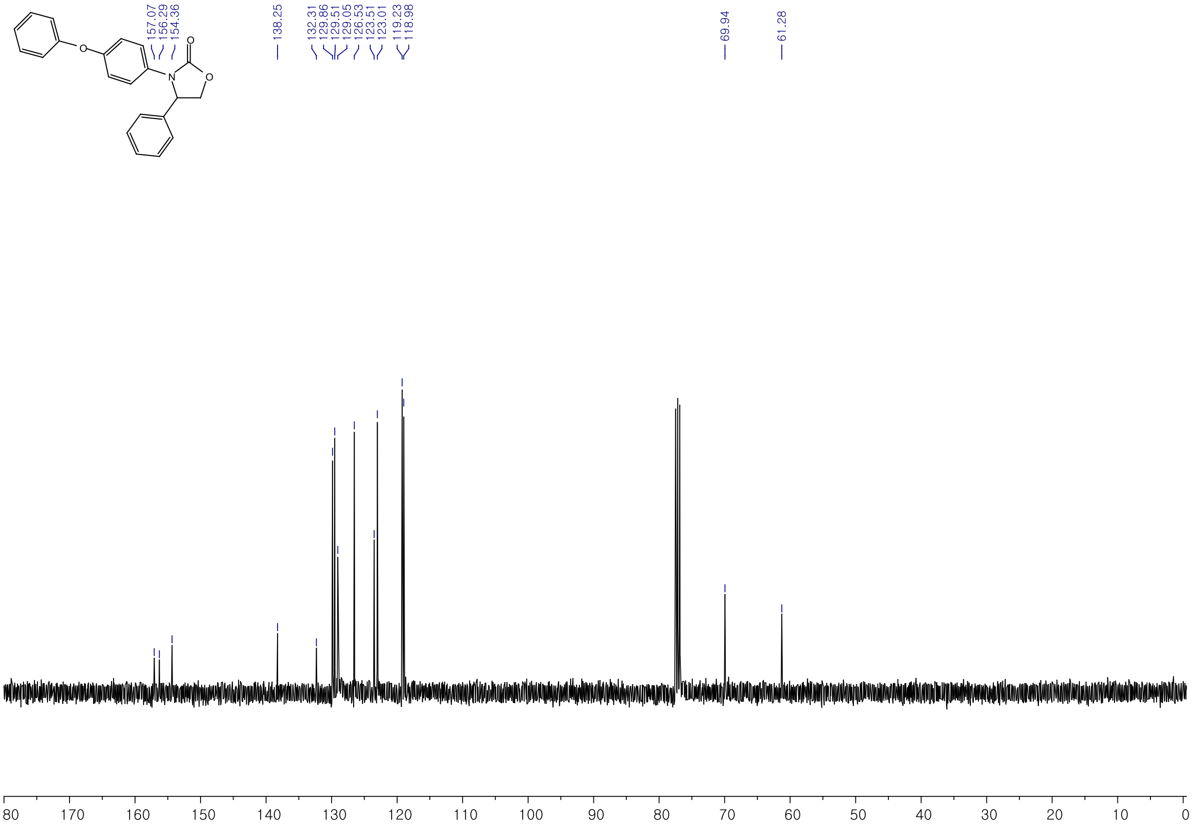

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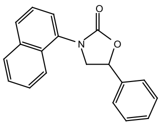

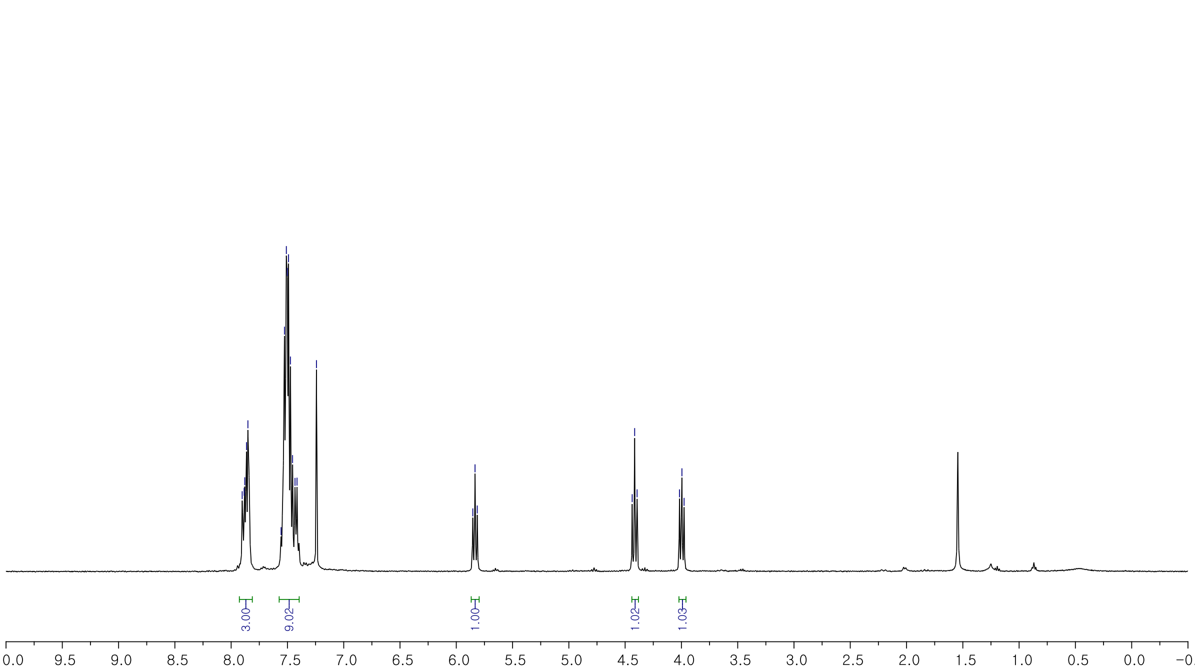
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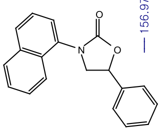

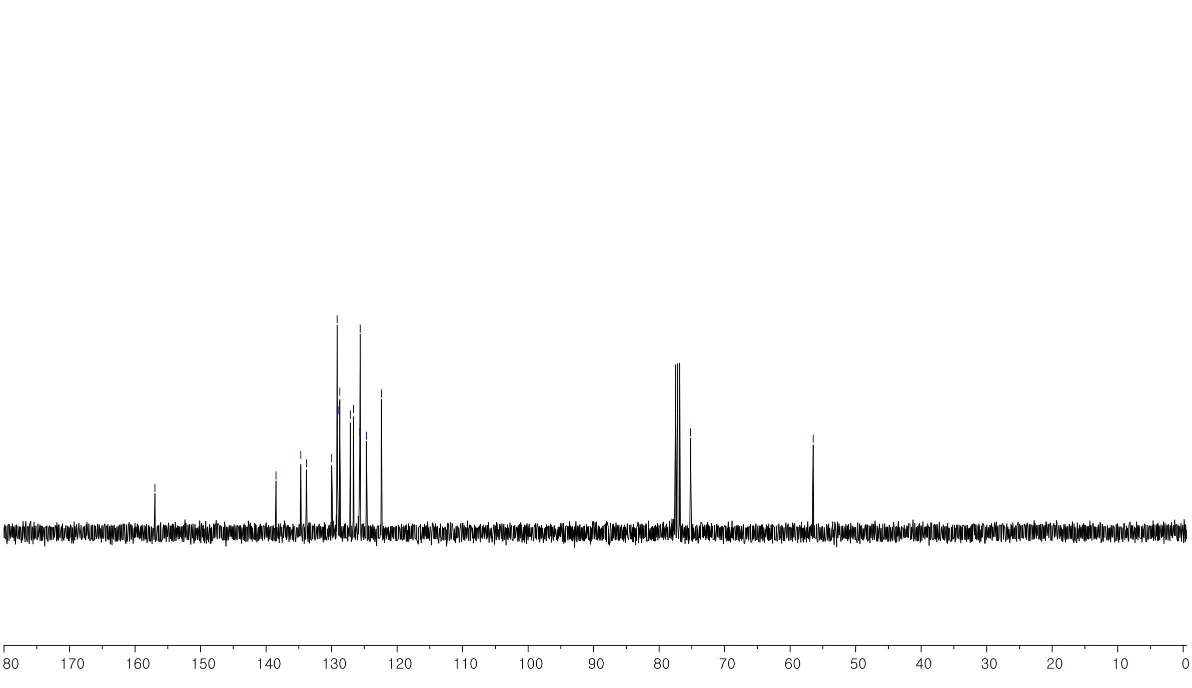
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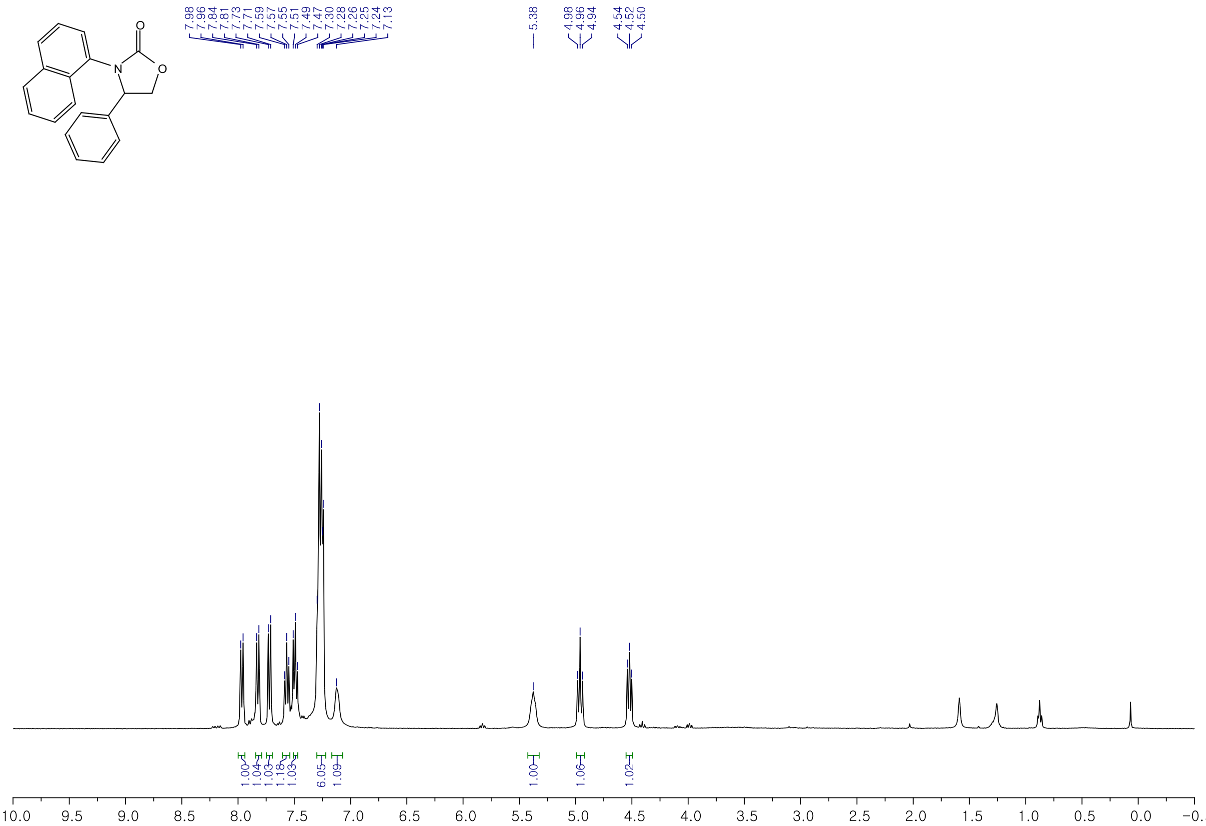
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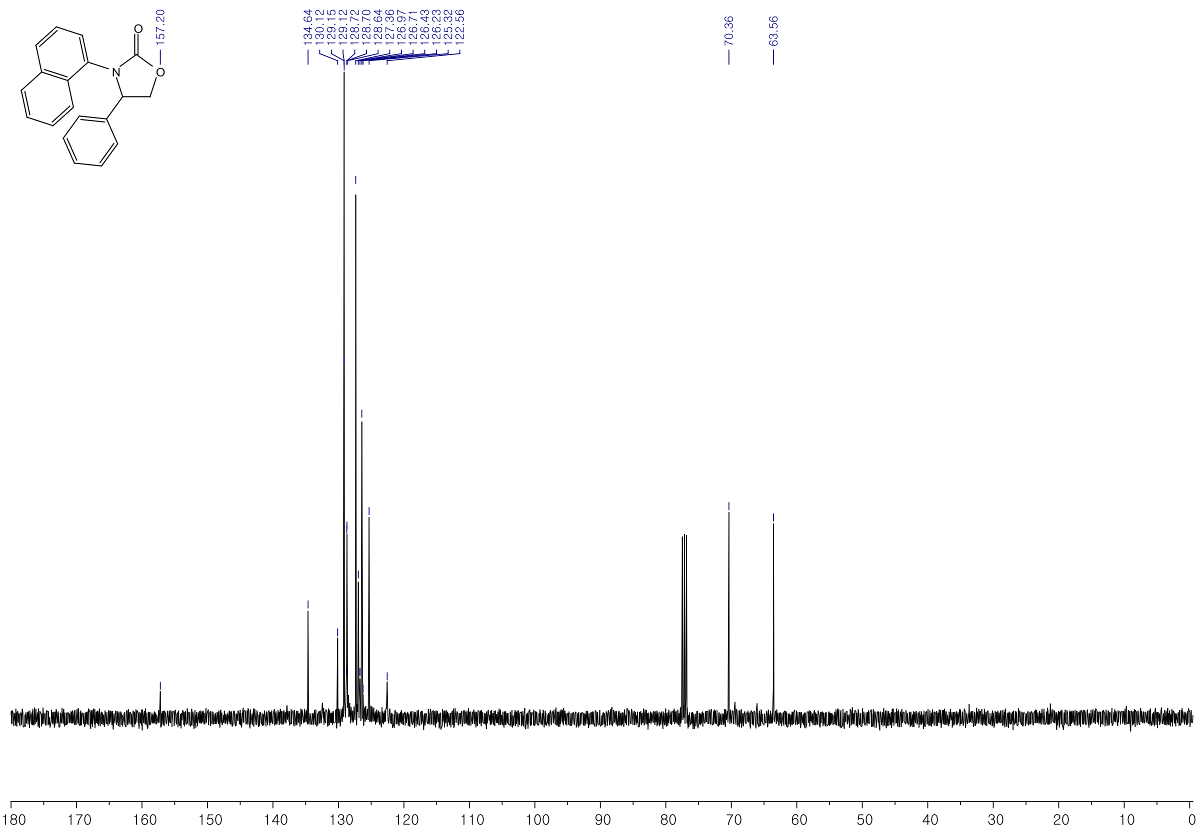
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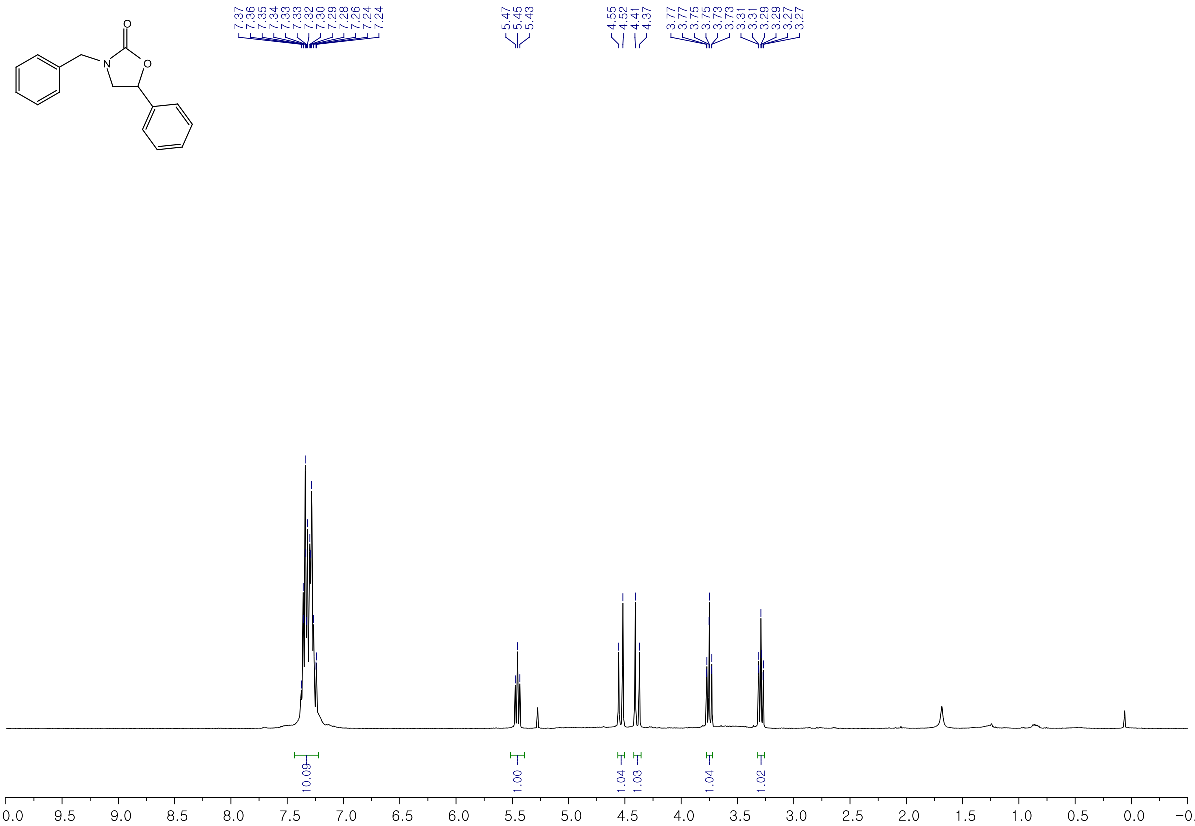

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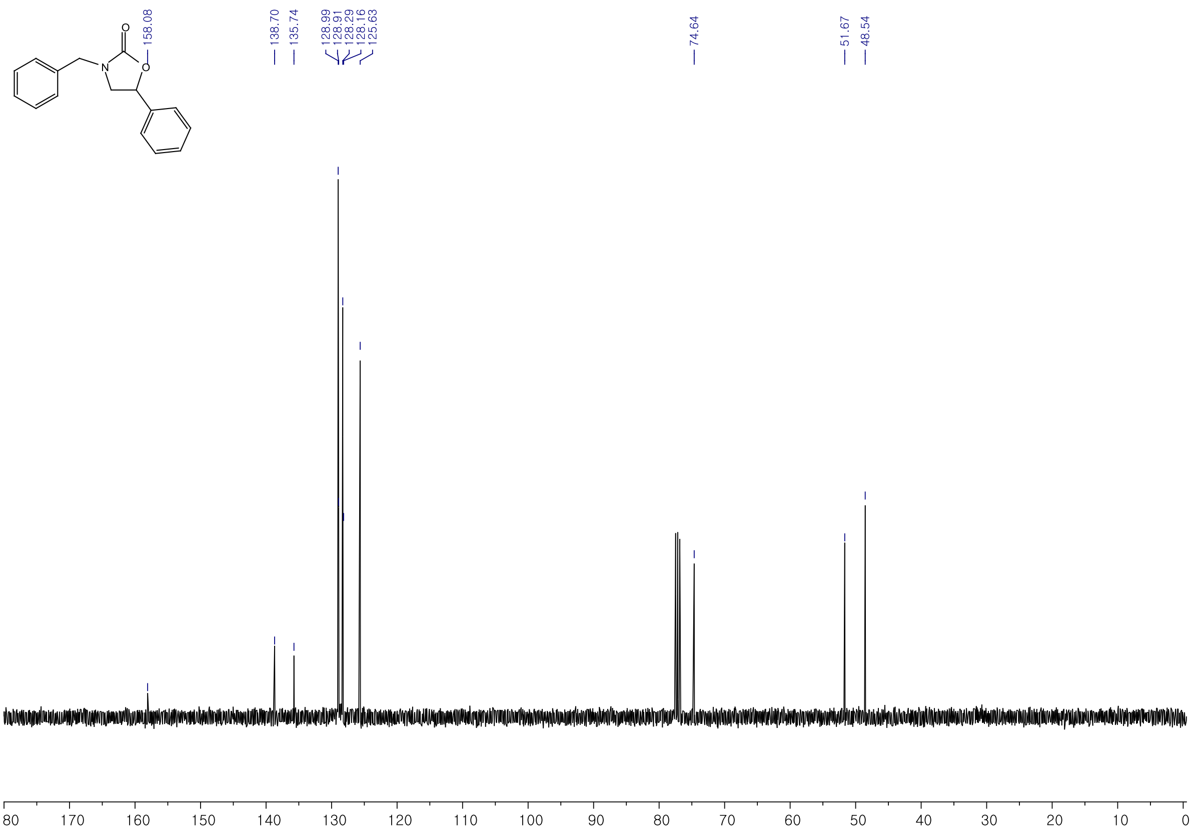

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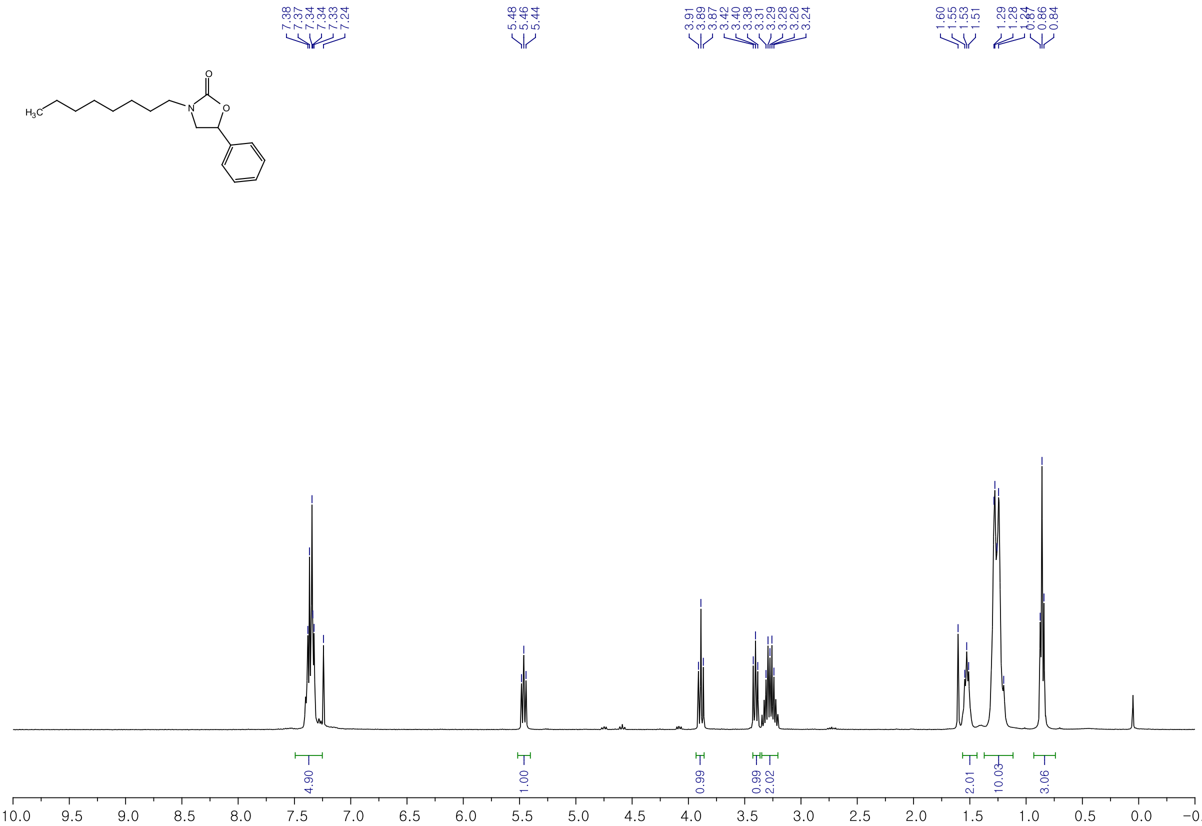

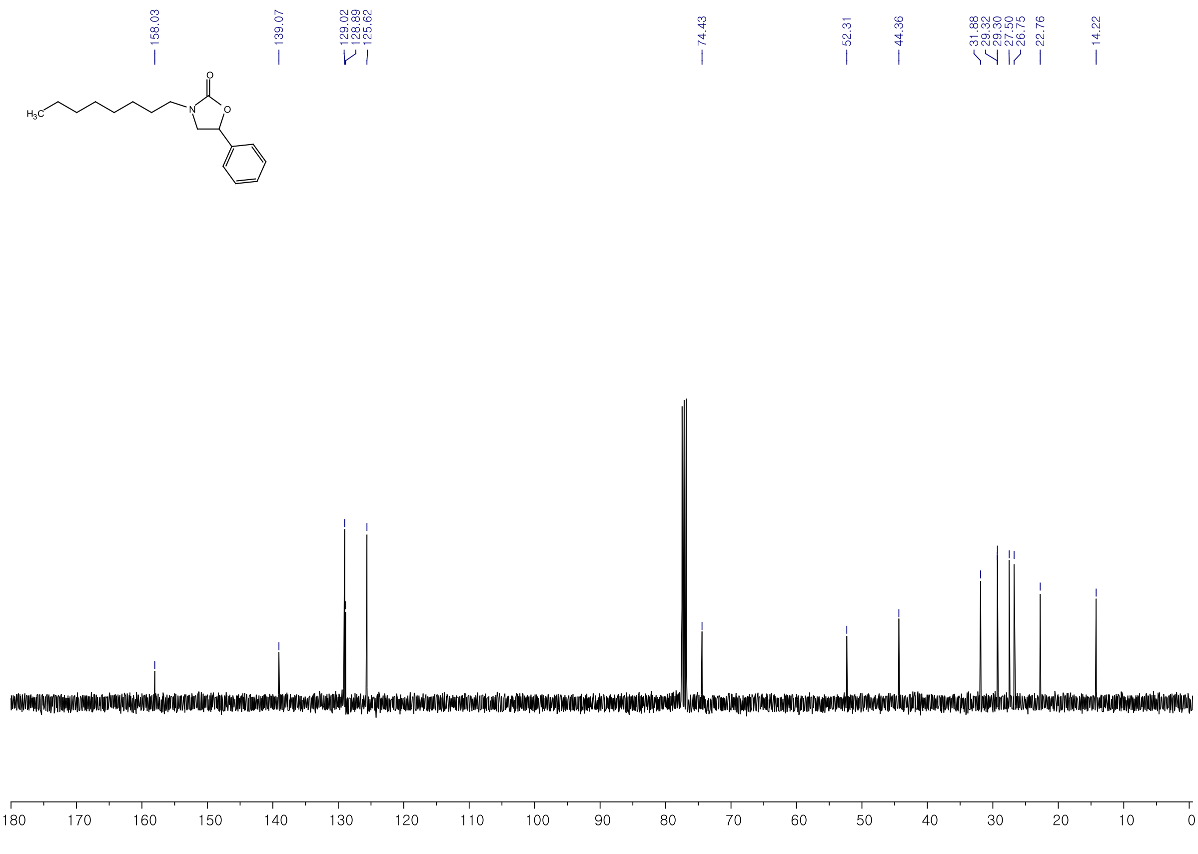

VI. Reference

[1] D. Limnios, C.G.Kokotos, *JOC*, **2014**, *79*, 4270-4276