

Supplementary Information

Metal-free electrochemical oxidative intramolecular cyclization of *N*-propargylbenzamides: Facile access to oxazole ketals

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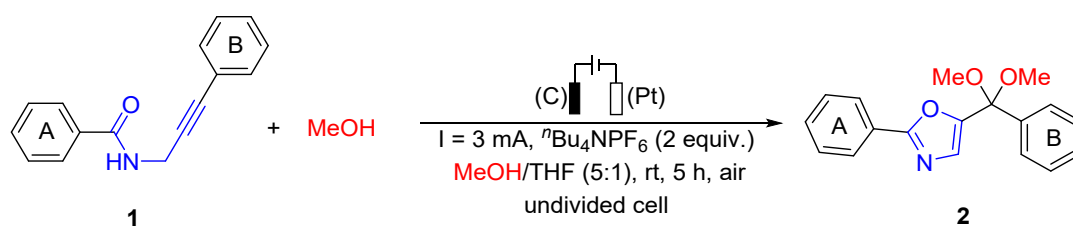
- (A) Typical Experimental Procedure
- (B) Analytical data
- (C) Spectra (NMR Spectra)
- (D) The crystal structure of compound 2m.

(A) Typical Experimental Procedure

(a) General

All reagents were purchased from commercial sources and used without further treatment, unless otherwise indicated. Methanol (CH₃OH) was purchased from Adamas Company, safe dry, water < 50 ppm. ¹H and ¹³C NMR spectra were recorded on Bruker 400 MHz spectrometers, chemical shifts are given in parts per million (ppm) relative to standard tetramethylsilane (0.00 ppm for ¹H NMR) or residual solvent peaks for ¹³C NMR. HRMS was obtained using a Q-TOF instrument equipped with ESI source. Standard column chromatography was performed on 200-300 mesh silica gel, using flash column chromatography techniques. The instrument for electrolysis is DC power source (PM3005B) (made in China). Cyclic voltammograms were obtained on a CHI 605E potentiostat. The anode electrode is graphite rod (Φ6 mm×80 mm) and cathode electrode is platinum electrodes (1.0×1.0 cm²).

(b) General procedures for electrochemical 5-*exo-dig* radical cyclization of N-propargylbenzamides.



To an undivided three-necked bottle (25 mL) were added **1** (0.2 mmol), nBu₄NPF₆ (0.4 mmol) and CH₃OH/THF (5:1, 6 mL). The bottle was equipped with platinum electrodes (1.0×1.0 cm²) as cathode and graphite rod electrode as anode under air. The reaction mixture was stirred and electrolyzed at a constant current of 3 mA at room temperature for 5 h until complete consumption of **1** as monitored by TLC analysis. After the reaction was finished and filtered and concentrated in vacuum. The resulting residue was purified by silica gel column chromatography (hexane/ethyl acetate).

(c) Cyclic voltammogram analysis

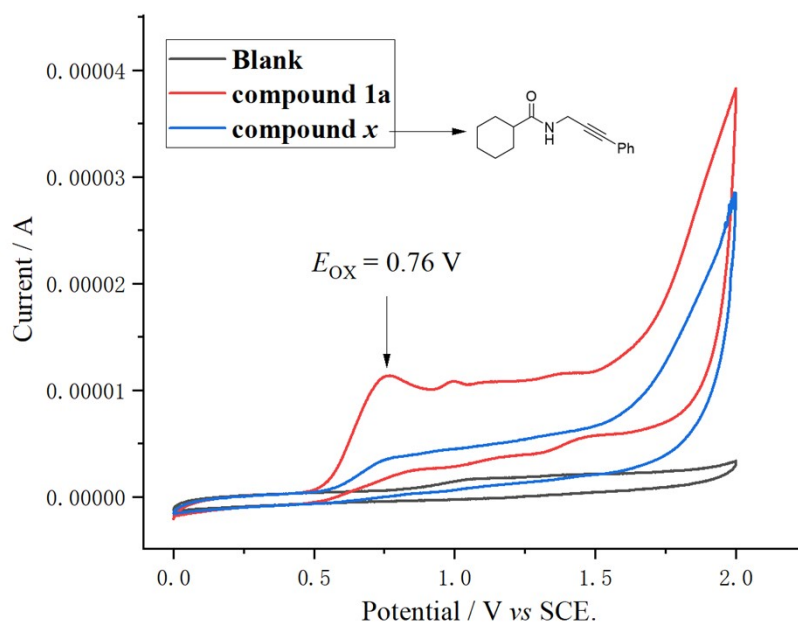


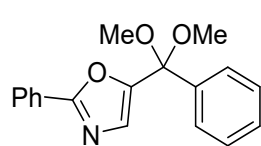
Figure S1. Cyclic voltammogram curves (0-2.0 V). Using GC disk as working electrode, Pt plate, and SCE as counter and reference electrode at 50 mV/s scan rate. **1** (0.02 M), Bu_4NBF_4 (0.1 M) and MeCN (10 mL). The inert compound *N*-(3-phenylprop-2-yn-1-yl)cyclohexanecarboxamide has no oxidative potential peak in the range of 0-2.0 V.

(d) experimental setup



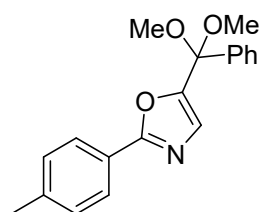
(B) Analytical data

5-(Dimethoxy(phenyl)methyl)-2-phenyloxazole (2a):



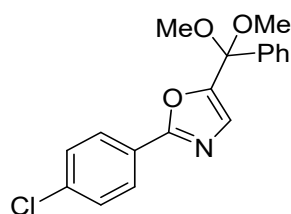
White solid, 75%, 44.3 mg, mp 61-62 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.97 – 7.91 (m, 2H), 7.58 (d, *J* = 7.0 Hz, 2H), 7.43 – 7.29 (m, 7H), 3.22 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 161.8, 151.0, 138.6, 130.4, 128.7, 128.5, 128.2, 127.3, 127.2, 127.1, 126.4, 99.9, 49.6. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₈H₁₈NO₃: 296.1281; found: 296.1289.

5-(Dimethoxy(phenyl)methyl)-2-(*p*-tolyl)oxazole (2b) :



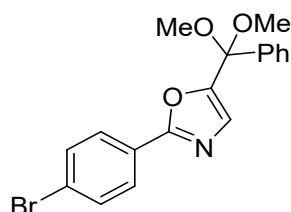
White solid, 58%, 35.8 mg, mp 60-62 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.82 (d, *J* = 8.1 Hz, 2H), 7.58 (d, *J* = 7.0 Hz, 2H), 7.41 – 7.31 (m, 3H), 7.27 (s, 1H), 7.19 (d, *J* = 7.9 Hz, 2H), 3.21 (s, 6H), 2.36 (s, 3H). ¹³C NMR (100 MHz, CDCl₃) δ 162.0, 150.6, 140.7, 138.7, 129.4, 128.5, 128.2, 127.1×2, 126.4, 124.6, 99.9, 49.6, 21.5. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₉H₂₀NO₃: 310.1438; found: 310.1435.

2-(4-Chlorophenyl)-5-(dimethoxy(phenyl)methyl)oxazole (2c) :



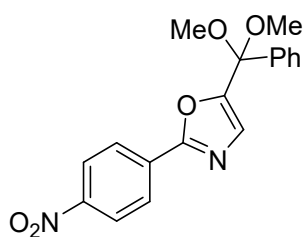
White solid, 51%, 33.6 mg, mp 76-77 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.86 (d, *J* = 8.6 Hz, 2H), 7.57 (d, *J* = 6.9 Hz, 2H), 7.41 – 7.32 (m, 5H), 7.30 (s, 1H), 3.21 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 160.9, 151.3, 138.5, 136.5, 129.0, 128.6, 128.2, 127.7, 127.3, 127.1, 125.8, 99.8, 49.6. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₈H₁₇ClNO₃: 330.0892; found: 330.0898.

2-(4-Bromophenyl)-5-(dimethoxy(phenyl)methyl)oxazole (2d) :



White solid, 35%, 26.1 mg, mp 79-81 °C; ¹H NMR (400 MHz, DMSO) δ 7.75 (d, *J* = 8.5 Hz, 2H), 7.68 (d, *J* = 8.5 Hz, 2H), 7.52 (d, *J* = 7.3 Hz, 2H), 7.46 – 7.33 (m, 4H), 3.14 (s, 6H). ¹³C NMR (100 MHz, DMSO) δ 160.4, 151.5, 138.7, 132.7, 129.2, 128.9, 128.2, 127.6, 127.1, 126.1, 124.8, 99.8, 49.7. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₈H₁₇BrNO₃: 374.0387; found: 374.0396.

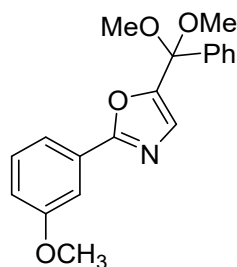
5-(Dimethoxy(phenyl)methyl)-2-(4-nitrophenyl)oxazole (2e) :



White solid, 50%, 34.1 mg, mp 88-89 °C; ¹H NMR (400 MHz, CDCl₃) δ 8.25 (d, *J* = 8.7 Hz, 2H), 8.09 (d, *J* = 8.7 Hz, 2H), 7.58 (d, *J* = 7.2 Hz, 2H), 7.44 – 7.30 (m, 4H), 3.22 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 159.6, 152.7, 148.6, 138.3, 132.7, 128.8, 128.3, 128.1, 127.1×2, 124.0, 99.8, 49.6.

HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₈H₁₇N₂O₅: 341.1132; found: 341.1141.

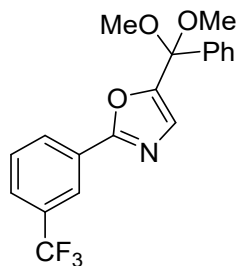
5-(Dimethoxy(phenyl)methyl)-2-(3-methoxyphenyl)oxazole (2f) :



White solid, 48%, 31.2 mg, mp 74-76 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.58 (d, *J* = 8.1 Hz, 2H), 7.51 (d, *J* = 7.8 Hz, 1H), 7.47 (s, 1H), 7.39-7.26 (m, 5H), 6.95 (d, *J* = 8.2 Hz, 1H), 3.83 (s, 3H), 3.22 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 161.7, 159.8, 151.0, 138.6, 129.8, 128.6, 128.5, 128.2, 127.2, 127.1, 118.9, 116.9,

111.1, 99.9, 55.5, 49.6. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₉H₂₀NO₄: 326.1387; found: 326.1395.

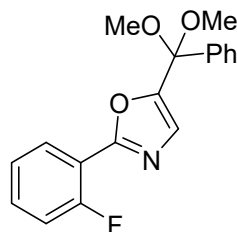
5-(Dimethoxy(phenyl)methyl)-2-(3-(trifluoromethyl)phenyl)oxazole (2g) :



White solid, 65%, 47.2 mg, mp 77-79 °C; ¹H NMR (400 MHz, CDCl₃) δ 8.19 (s, 1H), 8.11 (d, *J* = 7.8 Hz, 1H), 7.65 (d, *J* = 7.8 Hz, 1H), 7.58 (d, *J* = 7.2 Hz, 4H), 7.52 (t, *J* = 7.8 Hz, 1H), 7.43 – 7.28 (m, 4H), 3.22 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 160.4,

151.8, 138.5, 131.3(*q*, *J* = 33.0 Hz), 129.5, 129.3, 128.7, 128.3, 128.2, 127.5, 127.1, 126.8(*q*, *J* = 4.0 Hz), 123.7(*q*, *J* = 271.0 Hz), 123.3(*q*, *J* = 4.0 Hz), 99.8, 49.6. ¹⁹F NMR (376 MHz, CDCl₃) δ -62.9. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₉H₁₇F₃NO₃: 364.1155; found: 364.1161.

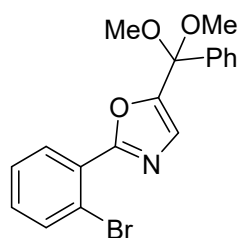
5-(Dimethoxy(phenyl)methyl)-2-(2-fluorophenyl)oxazole (2h) :



White solid, 89%, 55.7 mg, mp 81-83 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.86-7.85 (m, 1H), 7.59 (d, *J* = 7.3 Hz, 2H), 7.41 – 7.27

(m, 5H), 7.20 – 7.09 (m, 2H), 3.23 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 160.0 (d, *J* = 256.0 Hz), 158.0 (d, *J* = 5.0 Hz), 151.2, 138.5, 132.0, 131.9 (d, *J* = 9.0 Hz), 129.4, 128.6, 128.2, 127.3, 127.1, 124.2 (d, *J* = 3.0 Hz), 116.8 (d, *J* = 21.0 Hz), 99.8, 49.6. ¹⁹F NMR (376 MHz, CDCl₃) δ -111.7. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₈H₁₇FNO₃: 314.1187; found: 314.1185.

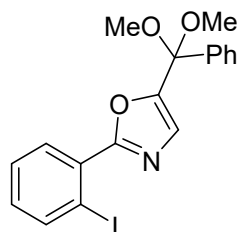
2-(2-Bromophenyl)-5-(dimethoxy(phenyl)methyl)oxazole (2i) :



White solid, 84%, 62.7 mg, mp 75-76 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.78 (dd, *J* = 7.8, 1.6 Hz, 1H), 7.64 (d, *J* = 8.0 Hz, 1H), 7.61 – 7.56 (m, 2H), 7.40 – 7.28 (m, 5H), 7.25-7.23 (m, 1H), 3.24 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 160.1, 151.6, 138.5, 134.4, 131.2×2, 128.5, 128.2, 127.2, 127.1, 126.9, 121.1, 99.8, 49.7.

HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₈H₁₇BrNO₃: 374.0387; found: 374.0395.

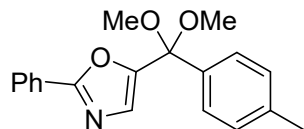
5-(Dimethoxy(phenyl)methyl)-2-(2-iodophenyl)oxazole (2j) :



White solid, 86%, 72.4 mg, mp 93-95 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.94 (d, *J* = 7.9 Hz, 1H), 7.71 (d, *J* = 6.9 Hz, 1H), 7.60 (d, *J* = 7.4 Hz, 2H), 7.44 – 7.28 (m, 5H), 7.05 (t, *J* = 7.2 Hz, 1H), 3.24 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 160.9, 151.5, 141.2, 138.6, 132.0, 131.2, 131.0, 128.5, 128.2, 127.9, 127.2, 126.8, 99.9,

93.7, 49.7. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₈H₁₇INO₃: 422.0248; found: 422.0251.

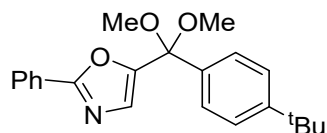
5-(Dimethoxy(p-tolyl)methyl)-2-phenyloxazole (2k):



White solid, 91%, 56.2 mg, mp 62-63 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.96 – 7.90 (m, 2H), 7.46 (d, *J* = 7.9 Hz, 2H), 7.41 – 7.36 (m, 3H), 7.30 (s, 1H), 7.18 (d, *J* = 7.9 Hz, 2H),

3.21 (s, 6H), 2.35 (s, 2H). ¹³C NMR (100 MHz, CDCl₃) δ 161.7, 151.1, 138.3, 135.7, 130.3, 128.9, 128.6, 127.3, 127.1, 127.0, 126.4, 99.9, 49.5, 21.2. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₉H₂₀NO₃: 310.1438; found: 310.1445.

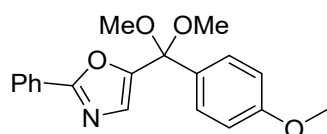
5-((4-(tert-Butyl)phenyl)dimethoxymethyl)-2-phenyloxazole (2l):



White solid, 63%, 44.2 mg, mp 94-95 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.98 – 7.93 (m, 2H), 7.50 – 7.45 (m, 2H),

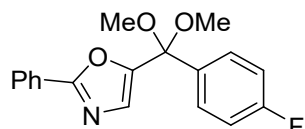
7.42 – 7.34 (m, 5H), 7.29 (s, 1H), 3.21 (s, 6H), 1.31 (s, 9H). ¹³C NMR (100 MHz, CDCl₃) δ 161.7, 151.4, 151.2, 135.5, 130.3, 128.6, 127.4, 127.0, 126.7, 126.4, 125.1, 99.9, 49.6, 34.6, 31.3. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₂₂H₂₆NO₃: 352.1907; found: 352.1899.

5-(Dimethoxy(4-methoxyphenyl)methyl)-2-phenyloxazole (2m):



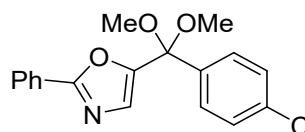
White solid, 93%, 60.5 mg, mp 73-74 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.94 (dd, *J* = 6.7, 3.0 Hz, 2H), 7.49 (d, *J* = 8.8 Hz, 2H), 7.44 – 7.36 (m, 3H), 7.28 (s, 1H), 6.89 (d, *J* = 8.9 Hz, 2H), 3.81 (s, 3H), 3.20 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 161.7, 159.7, 151.2, 130.8, 130.3, 128.7, 128.4, 127.3, 127.1, 126.4, 113.5, 99.8, 55.3, 49.5. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₉H₂₀NO₄: 326.1387; found: 326.1396.

5-((4-Fluorophenyl)dimethoxymethyl)-2-phenyloxazole (2n):



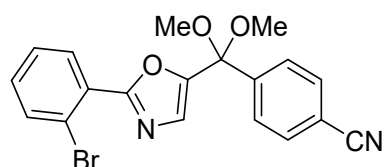
White solid, 67%, 41.9 mg, mp 79-80 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.96 – 7.90 (m, 2H), 7.56 (dd, *J* = 8.8, 5.4 Hz, 2H), 7.44 – 7.38 (m, 3H), 7.30 (s, 1H), 7.05 (t, *J* = 8.7 Hz, 2H), 3.20 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 163.0 (d, *J* = 218.0 Hz), 150.7, 134.6, 130.5, 129.1 (d, *J* = 9.0 Hz), 128.7, 127.3, 126.4, 115.2 (d, *J* = 22.0 Hz), 99.6, 49.6. ¹⁹F NMR (376 MHz, CDCl₃) δ -113.6. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₈H₁₇FNO₃: 314.1187; found: 314.1196.

5-((4-Chlorophenyl)dimethoxymethyl)-2-phenyloxazole (2o):



White solid, 51%, 33.6 mg, mp 99-101 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.93 (dd, *J* = 6.5, 3.0 Hz, 2H), 7.52 (d, *J* = 8.6 Hz, 2H), 7.43 – 7.37 (m, 3H), 7.34 (d, *J* = 8.5 Hz, 2H), 7.31 (s, 1H), 3.20 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 162.0, 150.4, 137.3, 134.5, 130.5, 128.7, 128.6, 128.5, 127.3, 127.2, 126.4, 99.5, 49.6. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₈H₁₇ClNO₃: 330.0892; found: 330.0885.

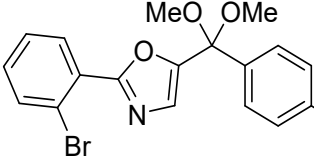
4-((2-(2-Bromophenyl)oxazol-5-yl)dimethoxymethyl)benzonitrile (2p) :



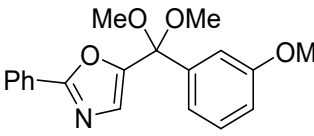
White solid, 71%, 56.5 mg, mp 77-79 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.78 (dd, *J* = 7.8, 1.4 Hz, 1H), 7.76 – 7.63 (m, 5H), 7.40 (s, 1H), 7.35 (t, *J* = 7.0 Hz,

1H), 7.29 – 7.25 (m, 1H), 3.24 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 160.6, 150.3, 143.8, 134.5, 132.2, 131.5, 131.3, 128.1, 128.0, 127.4, 121.1, 118.6, 112.6, 99.3, 49.9. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₉H₁₆BrN₂O₃: 399.0339; found: 399.0342.

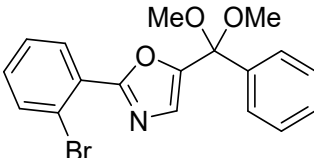
Ethyl 4-((2-(2-bromophenyl)oxazol-5-yl)dimethoxymethyl)benzoate (2q) :


White solid, 75%, 66.8 mg, mp 72-74 °C; ¹H NMR (400 MHz, CDCl₃) δ 8.04 (d, *J* = 8.3 Hz, 2H), 7.77 (d, *J* = 7.6 Hz, 1H), 7.65 (dd, *J* = 13.5, 8.4 Hz, 3H), 7.39 (s, 1H), 7.33 (t, *J* = 7.2 Hz, 1H), 7.27 – 7.20 (m, 1H), 4.37 (q, *J* = 7.1 Hz, 2H), 3.24 (s, 6H), 1.38 (t, *J* = 7.1 Hz, 3H). ¹³C NMR (100 MHz, CDCl₃) δ 166.3, 160.3, 150.9, 143.3, 134.4, 131.3, 131.2, 130.7, 129.5, 128.1, 127.3, 127.2, 127.1, 121.1, 99.6, 61.0, 49.8, 14.3. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₂₁H₂₁BrNO₅: 446.0598; found: 446.0601.

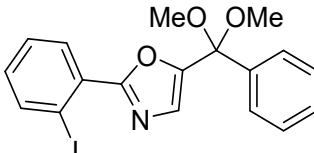
5-(Dimethoxy(3-methoxyphenyl)methyl)-2-phenyloxazole (2r):


White solid, 83%, 54.1 mg, mp 75-76 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.94 (dd, *J* = 6.1, 2.4 Hz, 2H), 7.44 – 7.35 (m, 3H), 7.29 (d, *J* = 9.3 Hz, 2H), 7.15 (d, *J* = 7.1 Hz, 2H), 6.86 (d, *J* = 9.1 Hz, 1H), 3.82 (s, 3H), 3.22 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 161.8, 159.6, 150.9, 140.2, 130.4, 129.2, 128.6, 127.3, 127.2, 126.4, 119.5, 114.1, 112.6, 99.7, 55.3, 49.6. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₉H₂₀NO₄: 326.1387; found: 326.1401.

2-(2-Bromophenyl)-5-((3-chlorophenyl)dimethoxymethyl)oxazole (2s) :

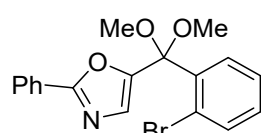

White solid, 79%, 64.3 mg, mp 78-80 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.80 (dd, *J* = 7.8, 1.5 Hz, 1H), 7.68 – 7.61 (m, 2H), 7.48 – 7.41 (m, 1H), 7.39 – 7.32 (m, 2H), 7.31 – 7.24 (m, 3H), 3.24 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 160.3, 150.9, 140.8, 134.5, 134.3, 131.3, 129.6, 128.8, 128.1, 127.5, 127.3, 127.1, 125.4, 121.1, 99.4, 49.8. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₈H₁₆BrClNO₃: 407.9997; found: 407.9989.

5-((3-Chlorophenyl)dimethoxymethyl)-2-(2-iodophenyl)oxazole (2t) :


White solid, 76%, 69.2 mg, mp 75-77 °C; ¹H NMR (400 MHz, CDCl₃) δ 8.00 – 7.92 (m, 1H), 7.73 (dd, *J* = 7.8,

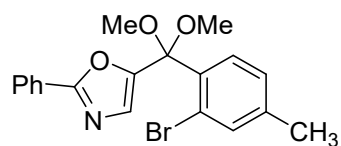
1.4 Hz, 1H), 7.64 (s, 1H), 7.50 – 7.42 (m, 1H), 7.39-7.36(m, 2H), 7.29-7.28 (m, 2H), 7.07 (td, $J = 7.8, 1.5$ Hz, 1H), 3.24 (s, 6H). ^{13}C NMR (100 MHz, CDCl_3) δ 161.2, 150.9, 141.2, 140.8, 134.3, 131.9, 131.3, 131.0, 129.6, 128.8, 128.0, 127.6, 127.0, 125.5, 99.4, 93.6, 49.8. HRMS (ESI): m/z $[\text{M}+\text{H}]^+$ calcd for $\text{C}_{18}\text{H}_{16}\text{ClNO}_3$: 455.9858; found: 455.9856.

5-((2-Bromophenyl)dimethoxymethyl)-2-phenyloxazole (2u):



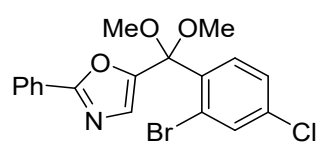
White solid, 49%, 36.6 mg, mp 101-102 °C; ^1H NMR (400 MHz, CDCl_3) δ 8.12 (d, $J = 8.0$ Hz, 1H), 7.92 (dd, $J = 6.2, 2.3$ Hz, 2H), 7.56 (d, $J = 7.9$ Hz, 1H), 7.45 – 7.36 (m, 4H), 7.34 (s, 1H), 7.21 (t, $J = 7.6$ Hz, 1H), 3.20 (s, 6H). ^{13}C NMR (100 MHz, CDCl_3) δ 161.3, 148.5, 136.5, 134.9, 130.6, 130.3, 130.2, 129.3, 128.6, 127.3, 127.1, 126.4, 121.6, 98.8, 49.3. HRMS (ESI): m/z $[\text{M}+\text{H}]^+$ calcd for $\text{C}_{18}\text{H}_{17}\text{BrNO}_3$: 374.0387; found: 374.0399.

5-((2-Bromo-4-methylphenyl)dimethoxymethyl)-2-phenyloxazole (2v):



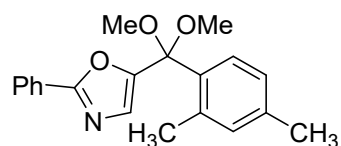
White solid, 82%, 63.5 mg, mp 76-78 °C; ^1H NMR (400 MHz, CDCl_3) δ 7.97 (d, $J = 8.1$ Hz, 1H), 7.93 (dd, $J = 6.5, 2.9$ Hz, 2H), 7.39-7.37 (m, 4H), 7.33 (s, 1H), 7.21 (d, $J = 8.1$ Hz, 1H), 3.19 (s, 6H), 2.33 (s, 3H). ^{13}C NMR (100 MHz, CDCl_3) δ 161.2, 148.7, 140.5, 135.3, 133.5, 130.4, 130.3, 129.1, 128.6, 127.9, 127.4, 126.4, 121.3, 98.8, 49.2, 20.6. HRMS (ESI): m/z $[\text{M}+\text{H}]^+$ calcd for $\text{C}_{19}\text{H}_{19}\text{BrNO}_3$: 388.0543; found: 388.0551.

5-((2-Bromo-4-chlorophenyl)dimethoxymethyl)-2-phenyloxazole(2w) :



White solid, 47%, 38.3 mg, mp 91-92 °C; ^1H NMR (400 MHz, CDCl_3) δ 8.06 (d, $J = 8.6$ Hz, 1H), 7.94 – 7.89 (m, 2H), 7.57 (s, 1H), 7.43 – 7.37 (m, 4H), 7.35 (s, 1H), 3.18 (s, 6H). ^{13}C NMR (100 MHz, CDCl_3) δ 161.4, 147.9, 135.4, 135.2, 134.3, 131.6, 130.4, 129.4, 128.7, 127.4, 127.2, 126.4, 122.0, 98.6, 49.3. HRMS (ESI): m/z $[\text{M}+\text{H}]^+$ calcd for $\text{C}_{18}\text{H}_{16}\text{BrClNO}_3$: 407.9997; found: 407.9999.

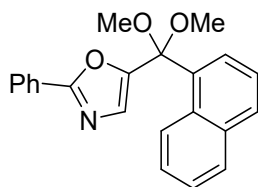
5-((2,4-Dimethylphenyl)dimethoxymethyl)-2-phenyloxazole(2x):



White solid, 94%, 60.7 mg, mp 82-84 °C; ^1H NMR (400 MHz, CDCl_3) δ 7.92 (dd, $J = 6.6, 2.9$ Hz, 2H), 7.83 (d, $J = 8.0$ Hz, 1H), 7.42 – 7.36 (m, 3H), 7.27 (s, 1H), 7.09 (d, $J =$

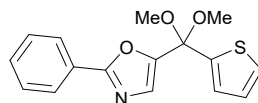
8.0 Hz, 1H), 6.92 (s, 1H), 3.17 (s, 6H), 2.32 (s, 3H), 2.21 (s, 3H). ¹³C NMR (100 MHz, CDCl₃) δ 161.4, 150.1, 138.4, 136.4, 133.1, 132.6, 130.3, 128.6, 128.4, 127.8, 127.4, 126.4, 99.3, 48.9, 20.9, 20.0 HRMS (ESI): *m/z* [M+H]⁺ calcd for C₂₀H₂₂NO₃: 324.1594; found: 324.1590.

5-(Dimethoxy(naphthalen-1-yl)methyl)-2-phenyloxazole (2y):



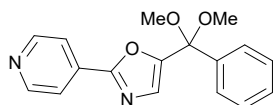
White solid, 83%, 57.3 mg, mp 102-103 °C; ¹H NMR (400 MHz, CDCl₃) δ 8.52 – 8.47 (m, 1H), 8.24 (d, *J* = 7.3 Hz, 1H), 7.91 – 7.80 (m, 4H), 7.56 (t, *J* = 7.8 Hz, 1H), 7.45 – 7.37 (m, 3H), 7.36 – 7.31 (m, 3H), 3.24 (s, 6H). ¹³C NMR (100 MHz, CDCl₃) δ 161.4, 150.6, 134.0, 133.1, 130.3, 130.2, 128.7, 128.6, 127.8, 127.2, 127.0, 126.3, 125.4, 124.9, 124.8, 99.3, 49.3. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₂₂H₂₀NO₃: 346.1438; found: 346.1440.

5-(dimethoxy(thiophen-2-yl)methyl)-2-phenyloxazole(2z):



White solid, 68%, 40.9 mg, mp 86-87 °C; ¹H NMR (400 MHz, CDCl₃) δ 7.98 (d, *J* = 3.5 Hz, 2H), 7.42-7.41 (m, 3H), 7.33-7.31 (m, 2H), 7.07 (d, *J* = 1.7 Hz, 1H), 7.03 – 6.96 (m, 1H), 3.27 (s, 6H). ¹³C NMR (101 MHz, CDCl₃) δ 161.9, 150.4, 142.5, 130.5, 128.7, 127.3, 127.2, 126.8, 126.5, 126.4, 98.7, 49.8. HRMS (ESI): *m/z* [M+H]⁺ calcd for C₁₆H₁₆NO₃S: 302.0845; found: 302.0844.

5-(dimethoxy(phenyl)methyl)-2-(pyridin-4-yl)oxazole (2aa):

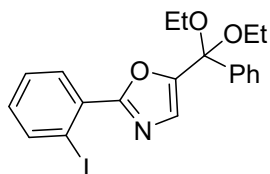


White solid, 73%, 43.2 mg, mp 65-67 °C; ¹H NMR (400 MHz, DMSO) δ 8.70 (d, *J* = 5.8 Hz, 2H), 7.74 (d, *J* = 5.8 Hz, 2H), 7.54-7.52 (m, 3H), 7.46 – 7.36 (m, 3H), 3.15 (s, 6H). ¹³C NMR (101 MHz, DMSO) δ

159.2, 152.6, 151.2, 138.5, 133.6, 129.3, 128.9, 128.1, 127.1, 120.0, 99.8, 49.8. HRMS

(ESI): m/z $[M+H]^+$ calcd for $C_{17}H_{17}N_2O_3$: 297.1234; found: 297.1236.

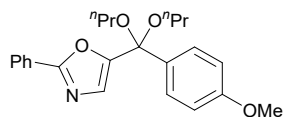
5-(Diethoxy(phenyl)methyl)-2-(2-iodophenyl)oxazole(2ab) :



White solid, 75%, 67.4 mg, mp 95-96 °C; 1H NMR (400 MHz, $CDCl_3$) δ 7.94 (d, $J = 7.9$ Hz, 1H), 7.71 (dd, $J = 7.8, 1.3$ Hz, 1H), 7.62 (d, $J = 7.3$ Hz, 2H), 7.33-7.29 (m, 5H), 7.05 (td, $J = 7.7, 1.4$ Hz, 1H), 3.49-3.43 (m, 4H), 1.24 (t, $J = 7.0$ Hz, 6H). ^{13}C

NMR (100 MHz, $CDCl_3$) δ 160.8, 152.5, 141.2, 139.6, 132.2, 131.1, 131.0, 128.3, 128.1, 127.9, 127.2, 126.3, 99.2, 93.6, 57.7, 15.1. HRMS (ESI): m/z $[M+H]^+$ calcd for $C_{20}H_{21}INO_3$: 450.0561; found: 450.0566.

2-phenyl-5-(phenyldipropoxymethyl)oxazole (2ac):



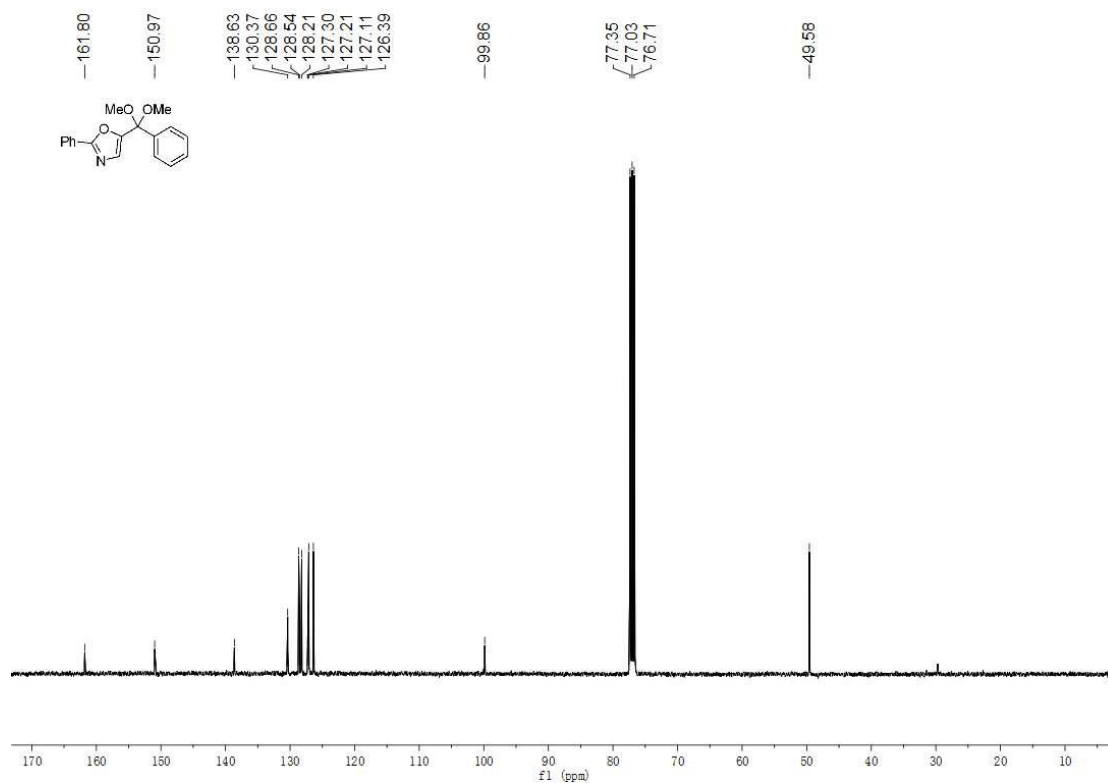
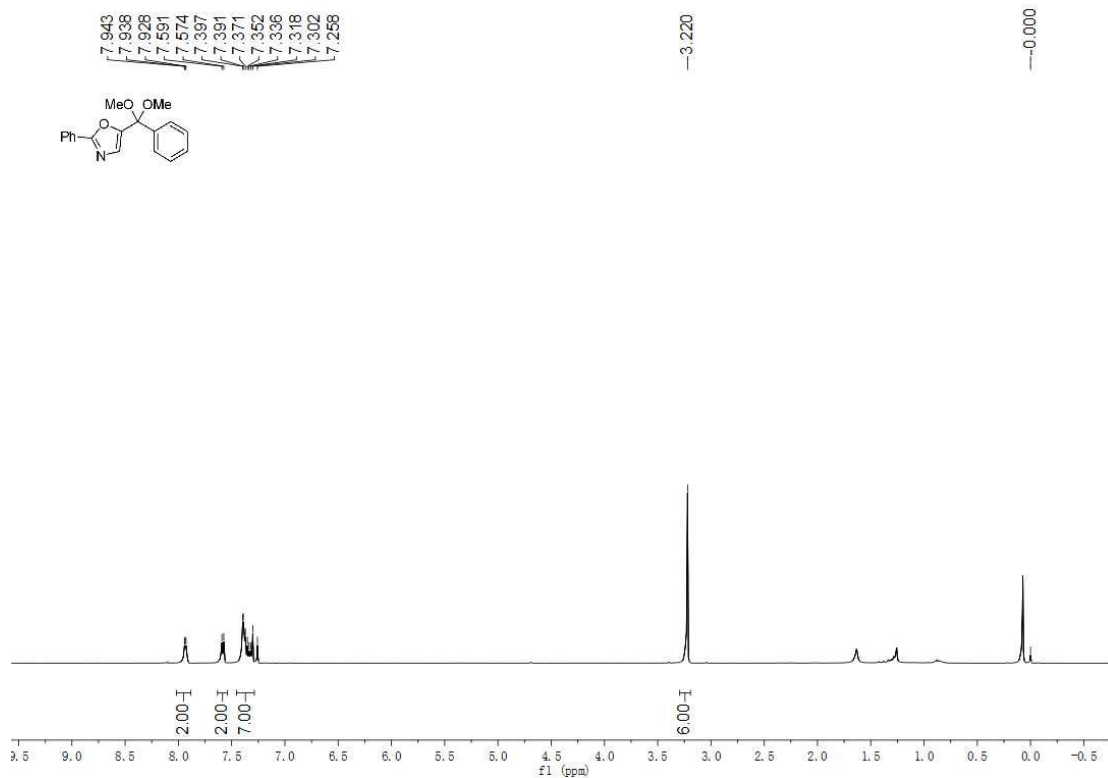
Yellow oil, 35%, 26.7 mg; 1H NMR (400 MHz, DMSO) δ 7.82-7.79 (m, 2H), 7.50 – 7.45 (m, 3H), 7.43 (d, $J = 8.7$ Hz, 2H),

7.34 (s, 1H), 6.94 (d, $J = 8.7$ Hz, 2H), 3.74 (s, 3H), 3.28-3.22 (m, 4H), 1.58-1.52 (m, 4H), 0.90 (t, $J = 7.3$ Hz, 6H). ^{13}C NMR (101 MHz, DMSO) δ 160.9, 159.7, 152.2, 131.6, 131.2, 129.6, 128.4, 127.1, 126.8, 126.2, 114.0, 98.9, 63.4, 55.5, 22.8, 11.2.

HRMS (ESI): m/z $[M+H]^+$ calcd for $C_{23}H_{28}NO_4$: 382.2013; found: 382.2020.

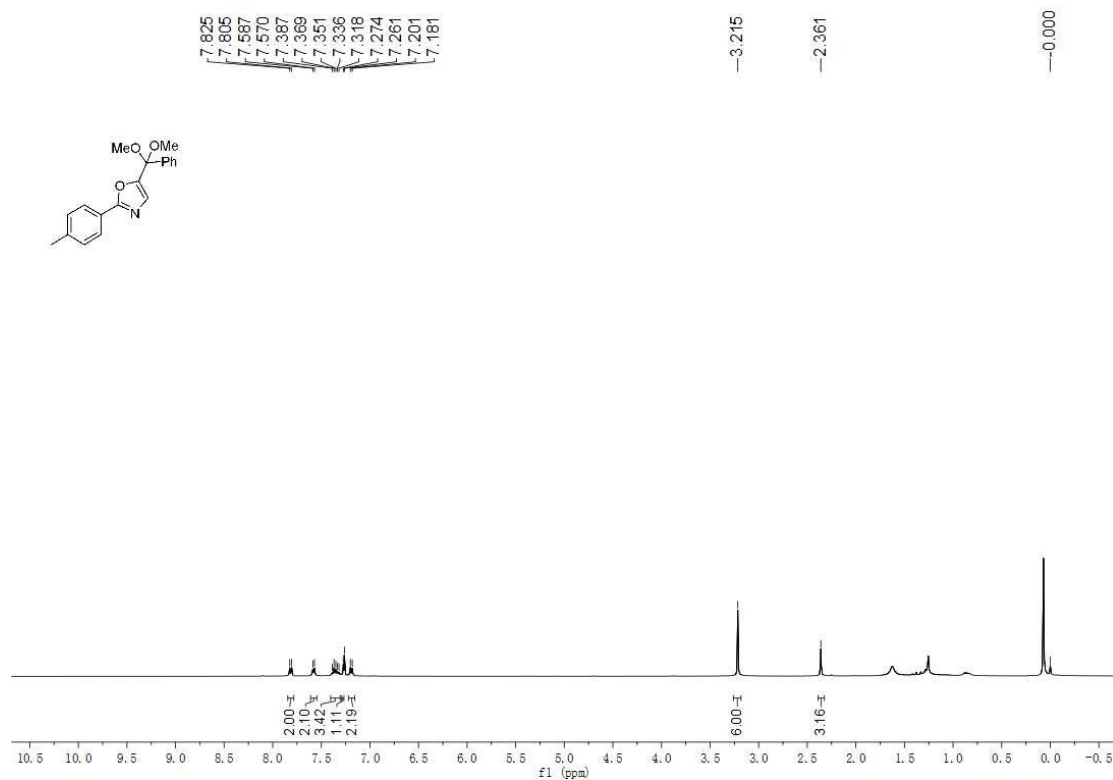
(C) Spectra (NMR Spectra)

5-(Dimethoxy(phenyl)methyl)-2-phenyloxazole (2a):

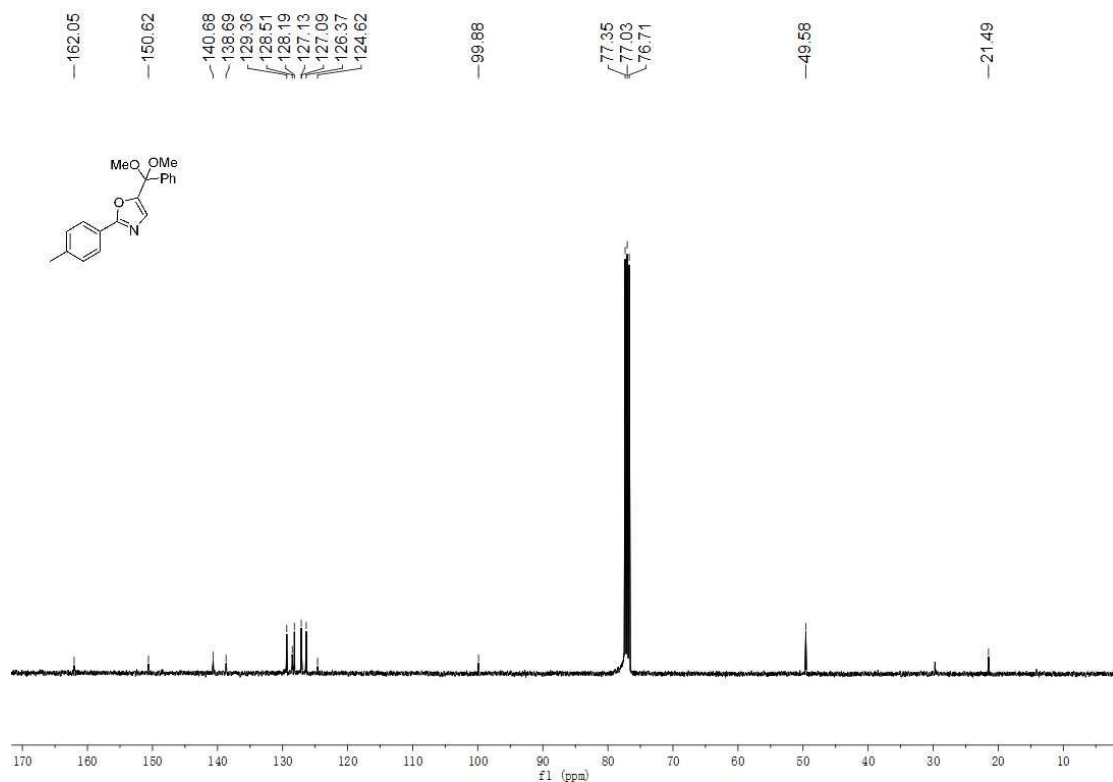


¹³C NMR (100 MHz, CDCl₃)

5-(Dimethoxy(phenyl)methyl)-2-(*p*-tolyl)oxazole (2b):

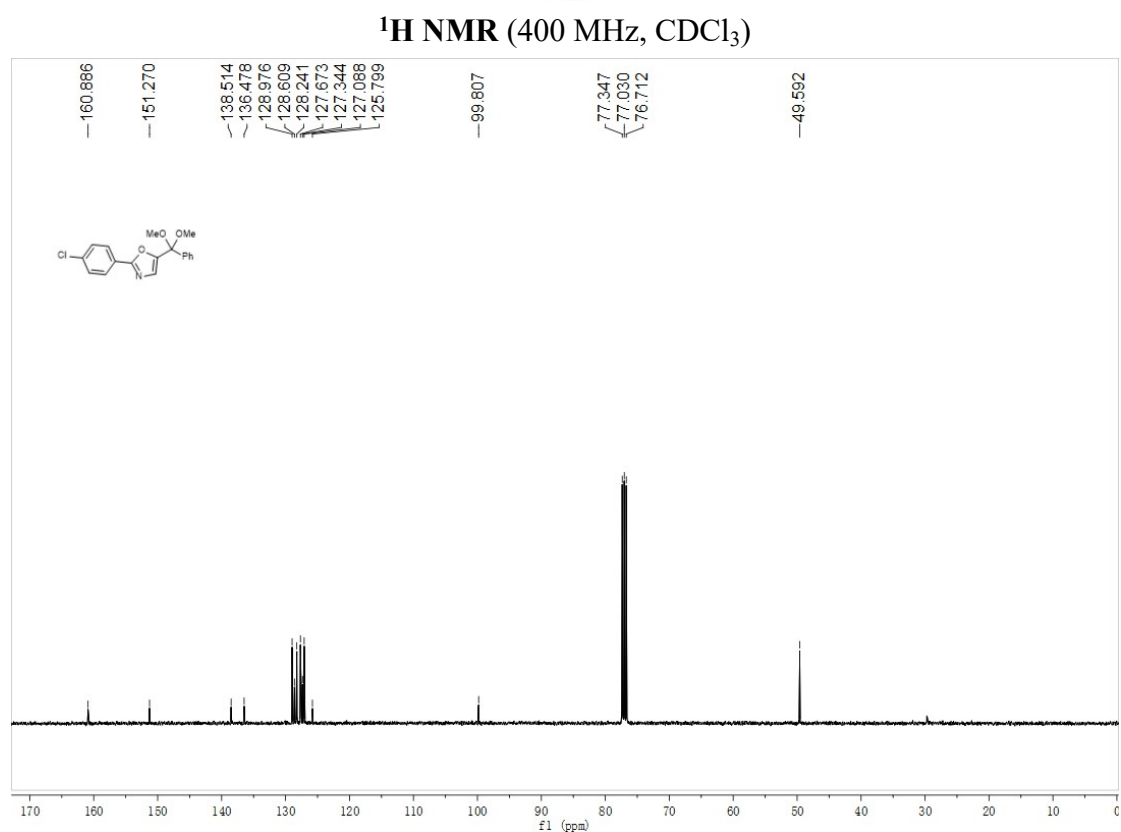
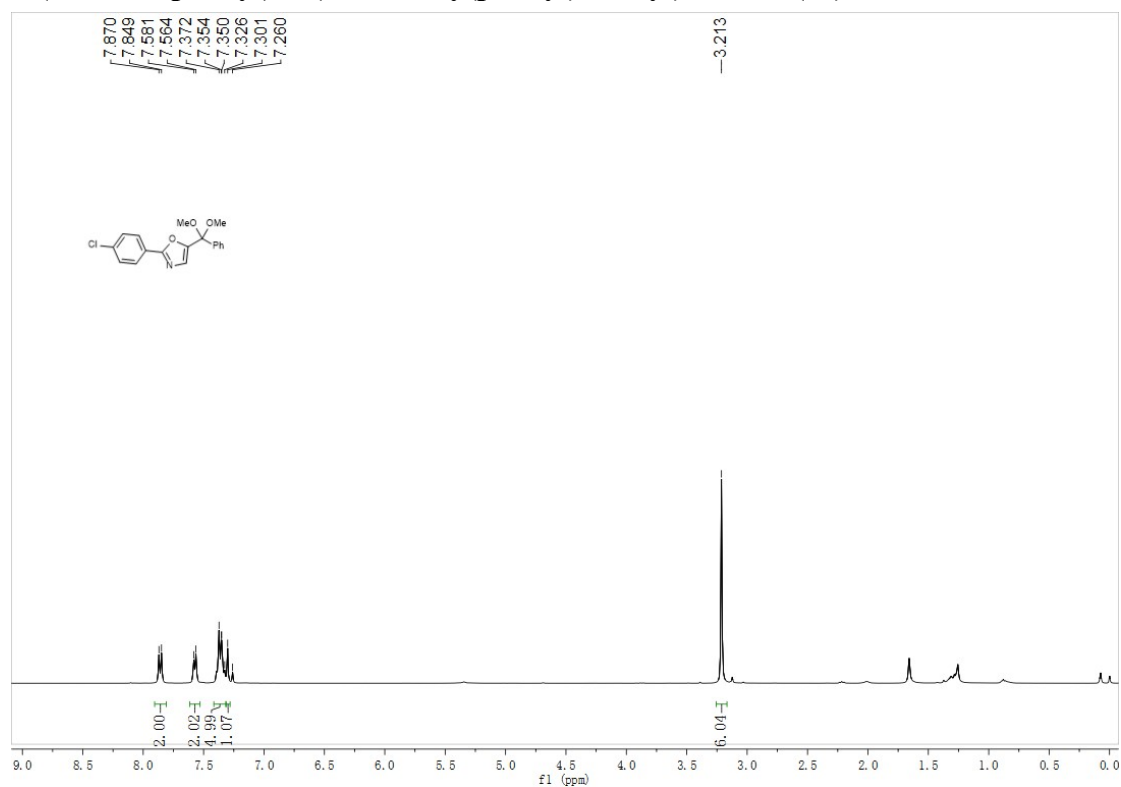


¹H NMR (400 MHz, CDCl₃)

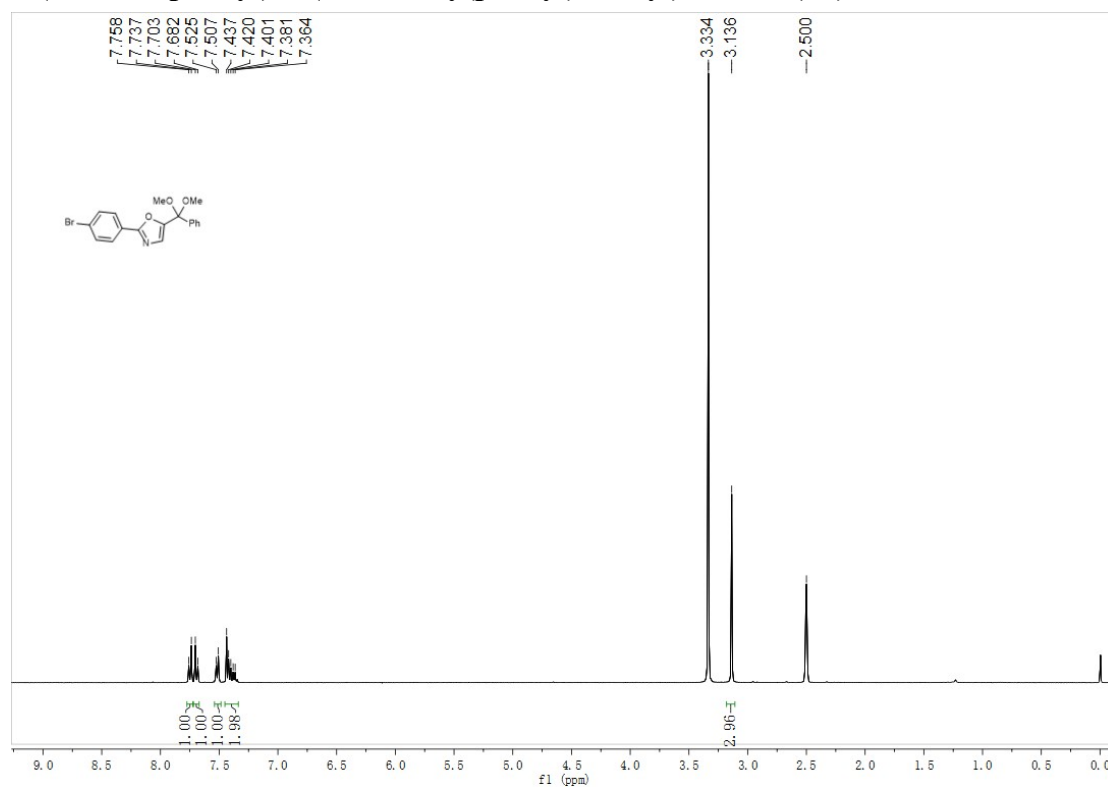


¹³C NMR (100 MHz, CDCl₃)

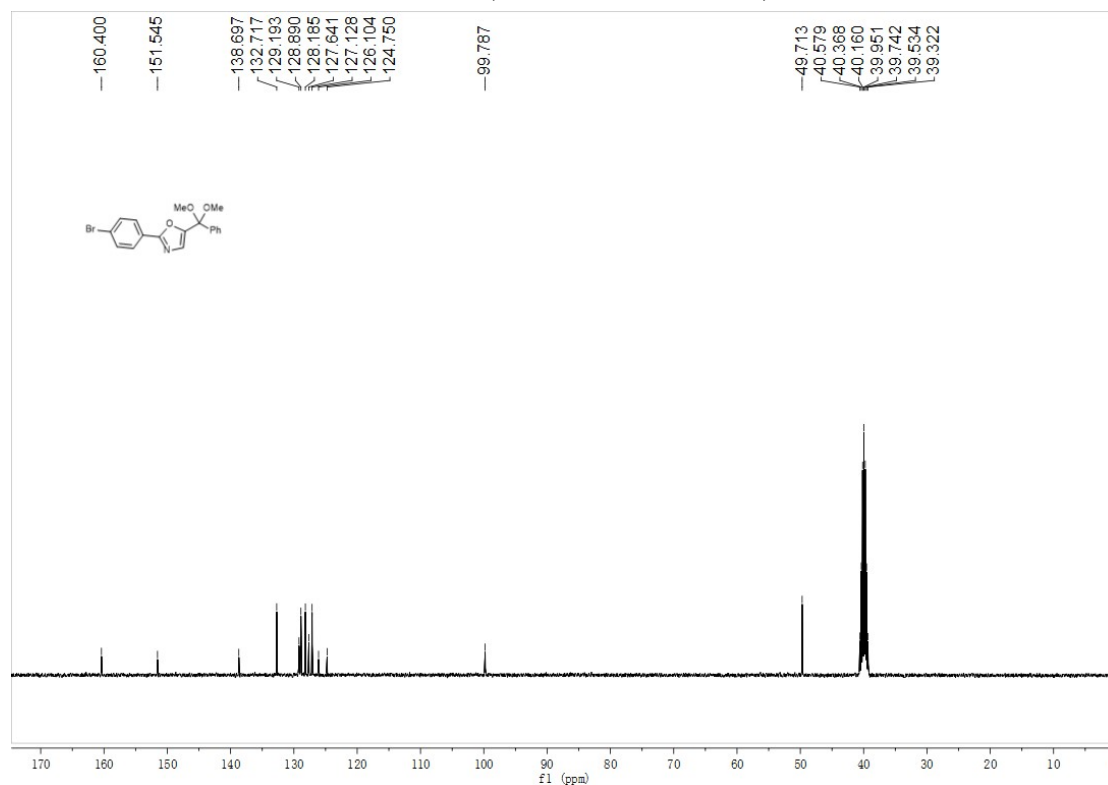
2-(4-Chlorophenyl)-5-(dimethoxy(phenyl)methyl)oxazole (2c):



2-(4-Bromophenyl)-5-(dimethoxy(phenyl)methyl)oxazole (2d):

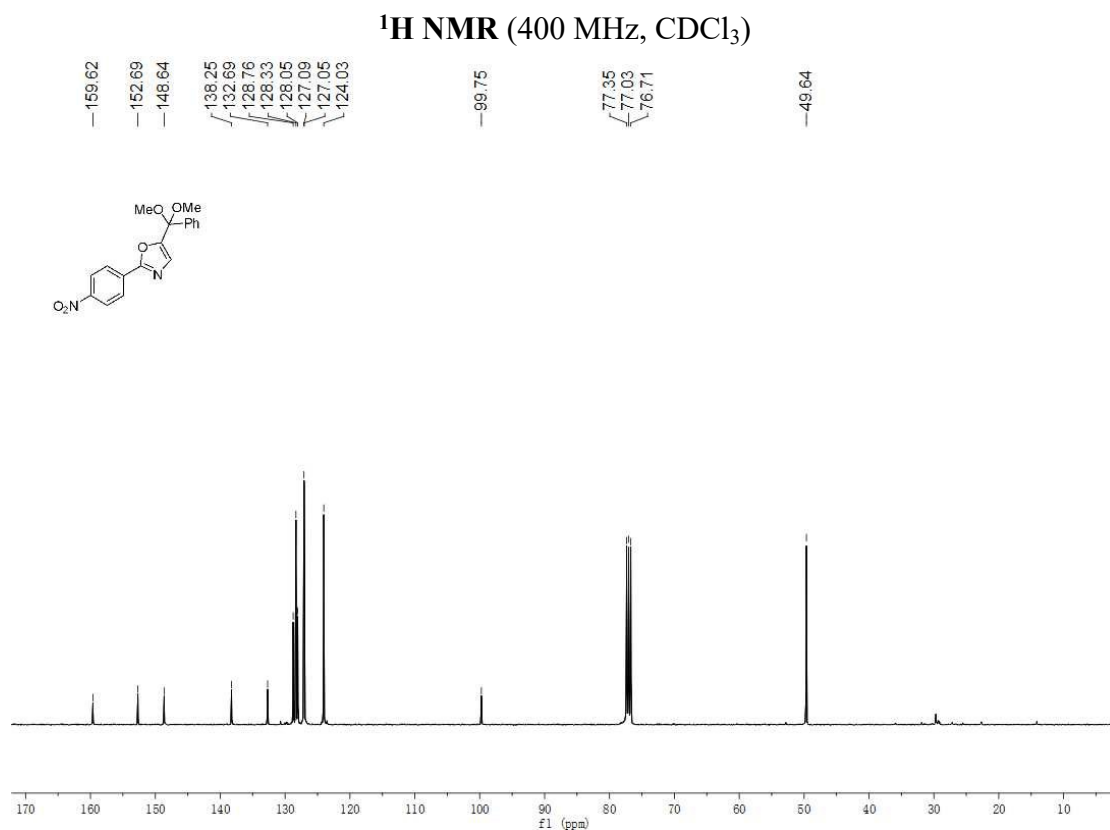
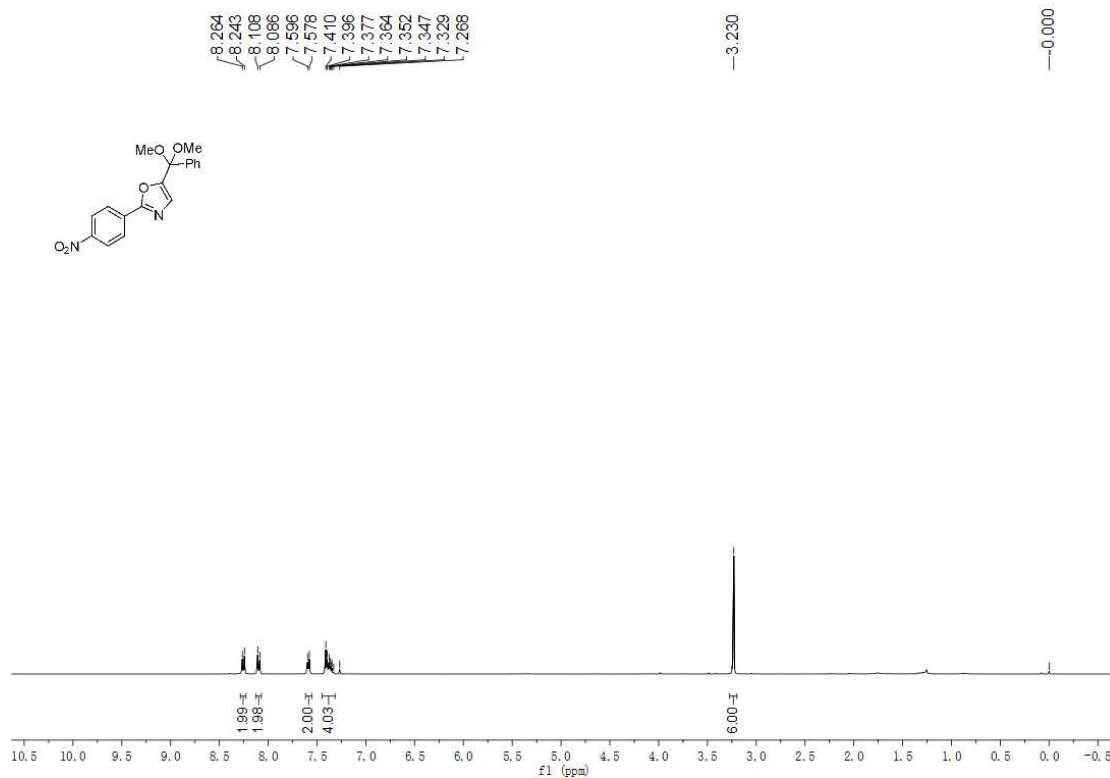


¹H NMR (400 MHz, DMSO-*d*₆)

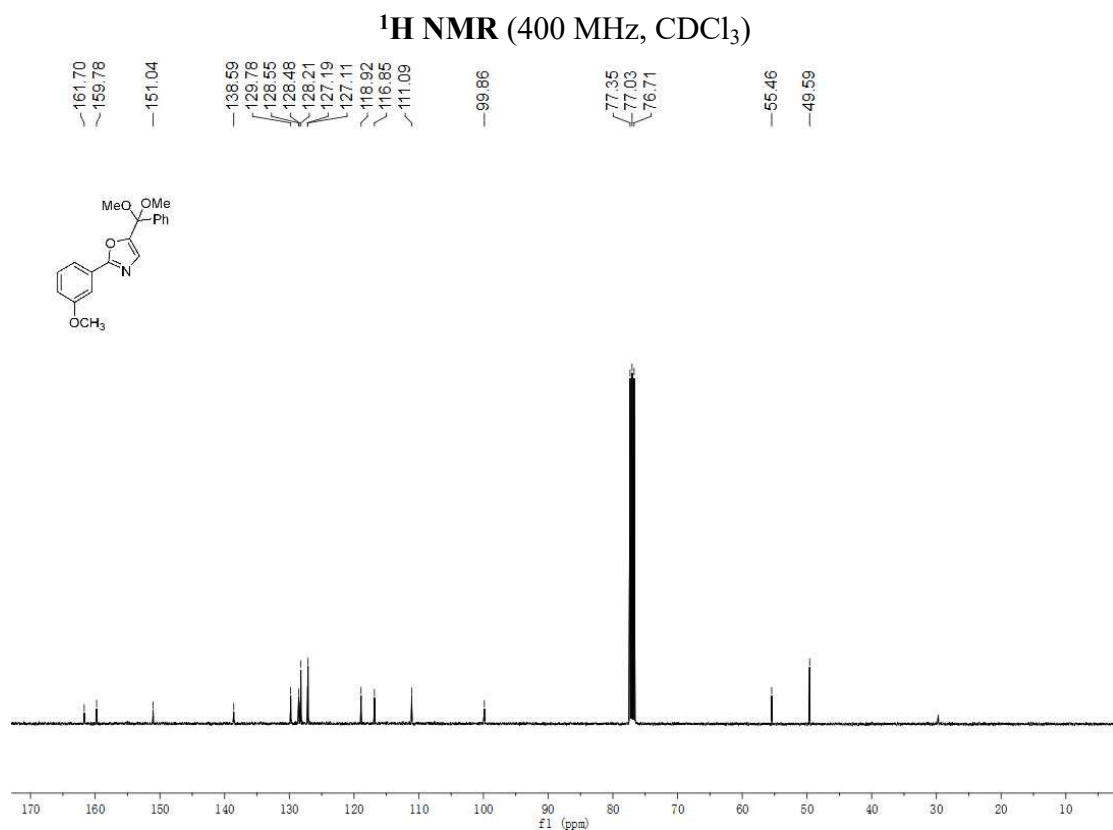
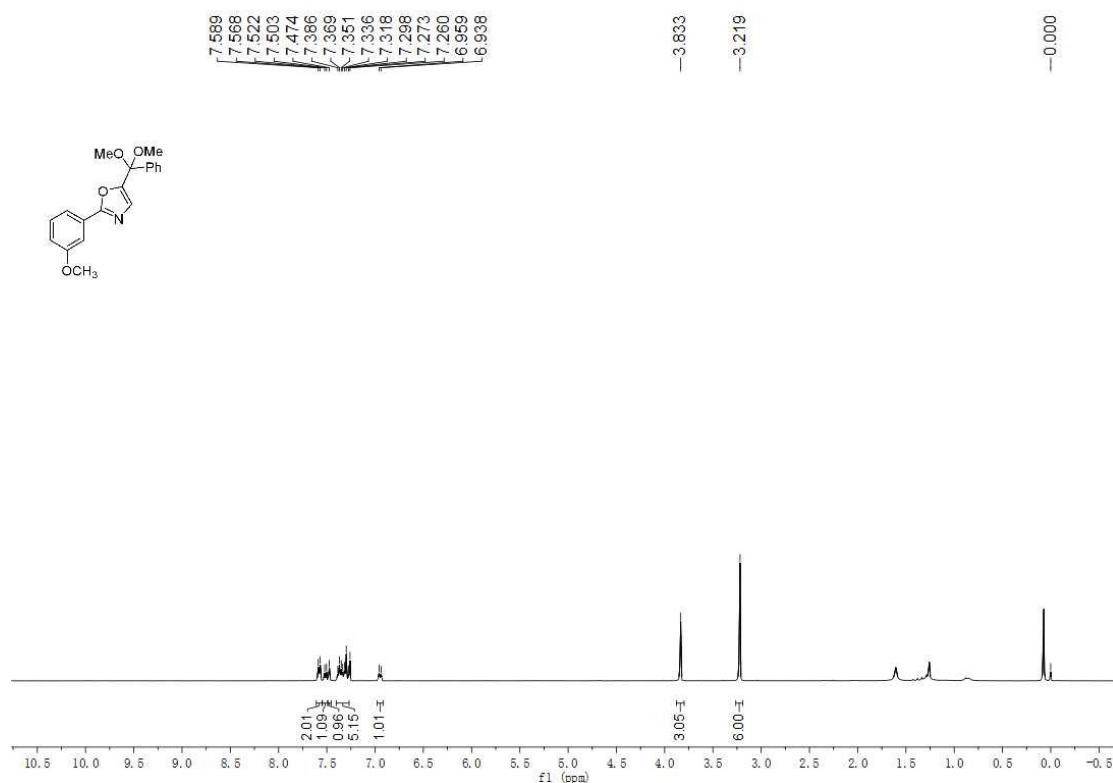


¹³C NMR (100 MHz, DMSO-*d*₆)

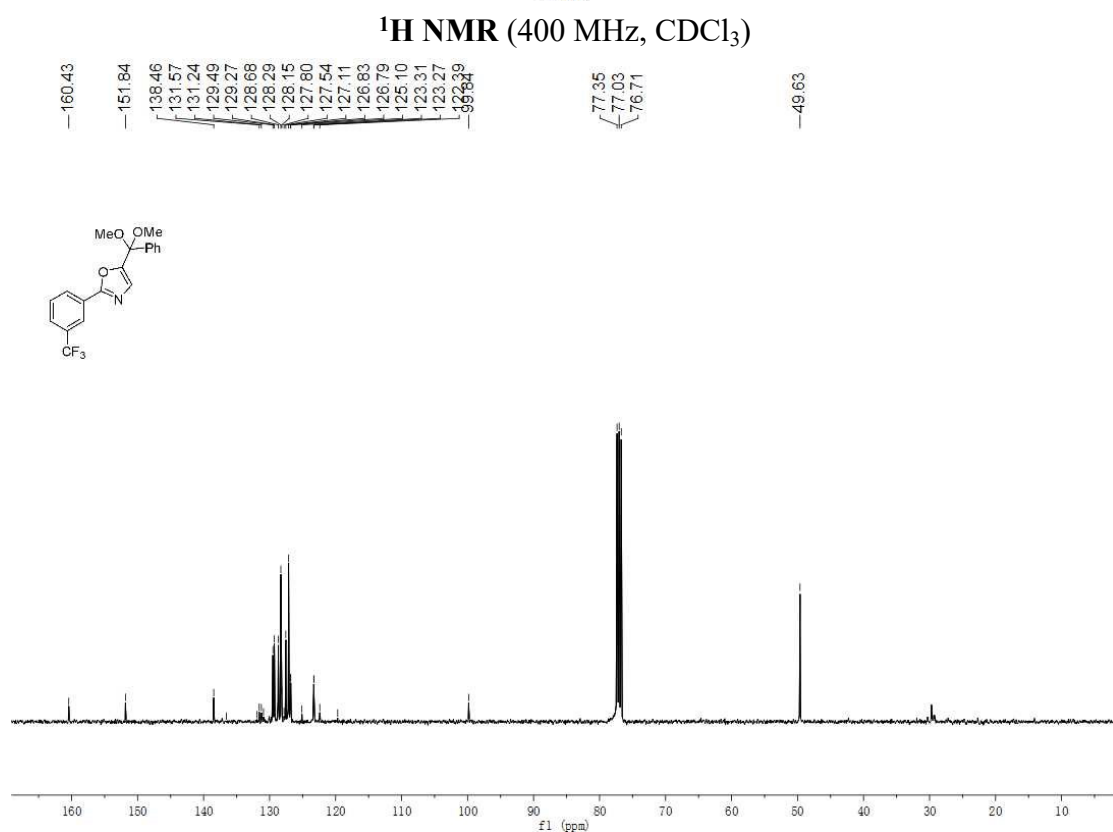
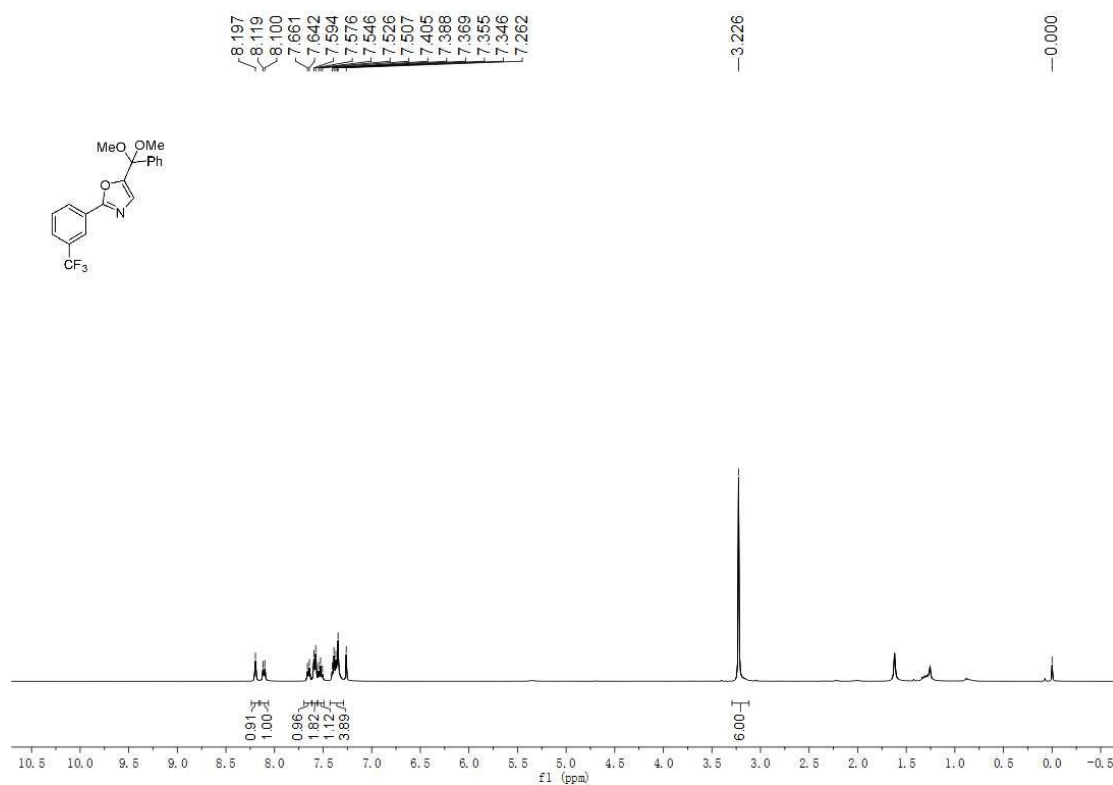
5-(Dimethoxy(phenyl)methyl)-2-(4-nitrophenyl)oxazole (2e):

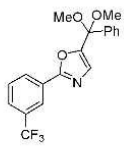


5-(Dimethoxy(phenyl)methyl)-2-(3-methoxyphenyl)oxazole (2f):

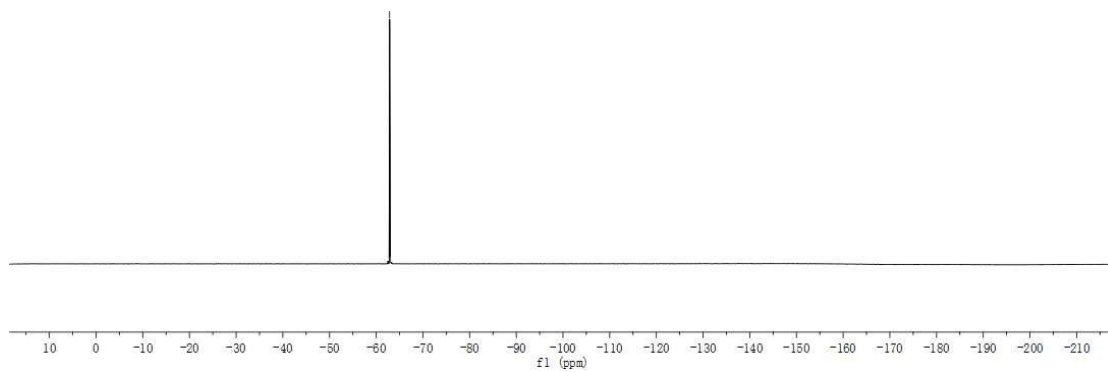


5-(Dimethoxy(phenyl)methyl)-2-(3-(trifluoromethyl)phenyl)oxazole (2g):



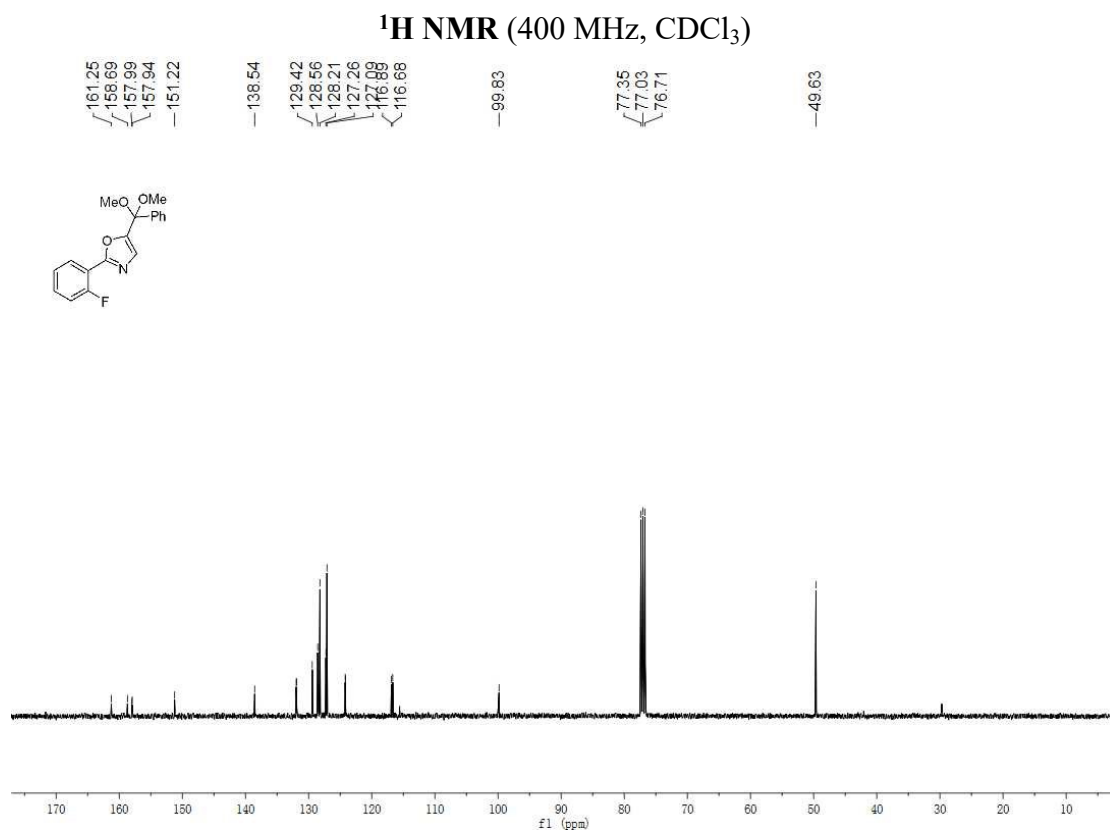
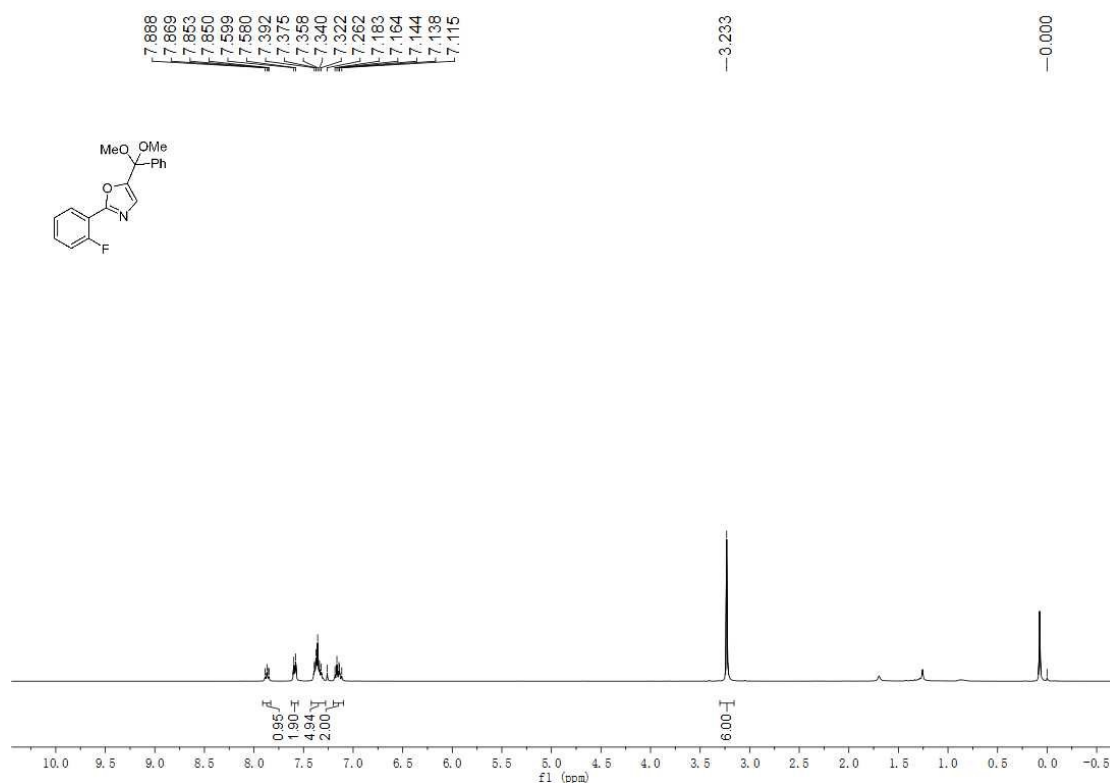


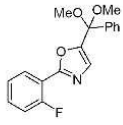
-62.86



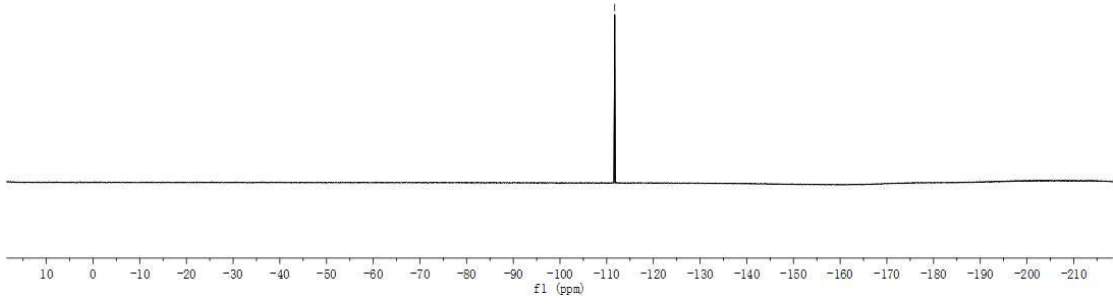
^{19}F NMR (376 MHz, CDCl_3)

5-(Dimethoxy(phenyl)methyl)-2-(2-fluorophenyl)oxazole (2h):



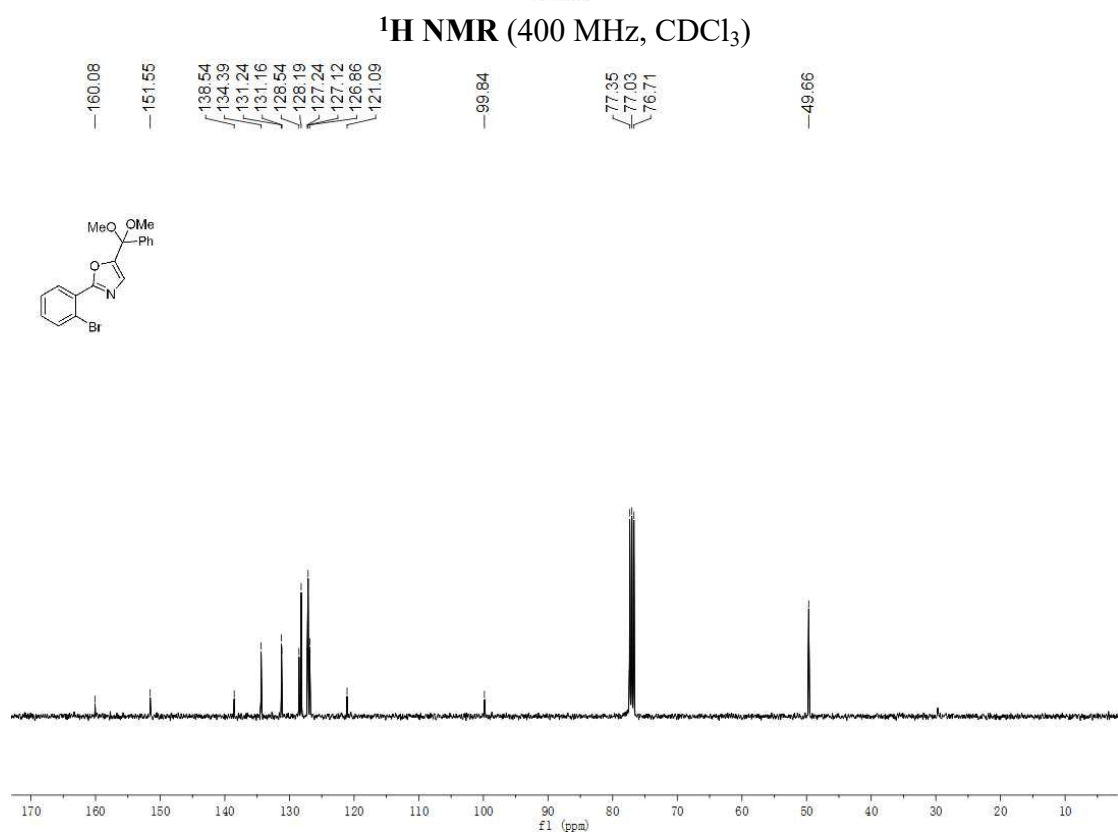
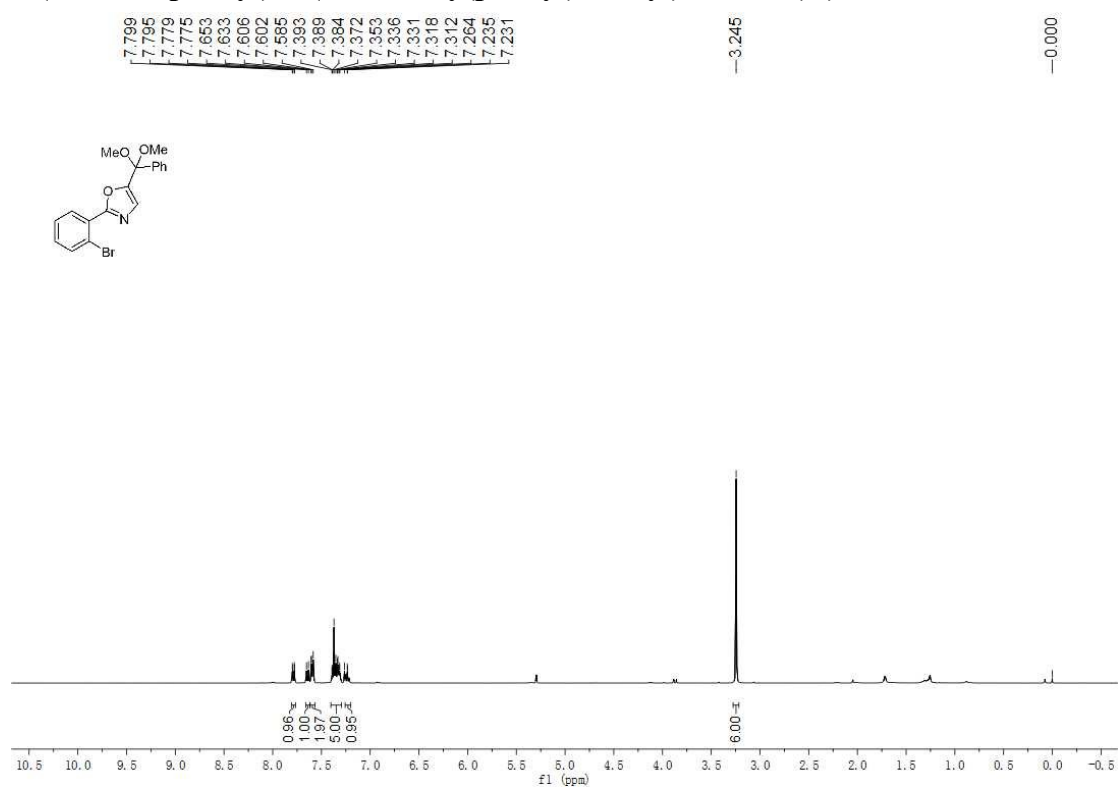


-111.71

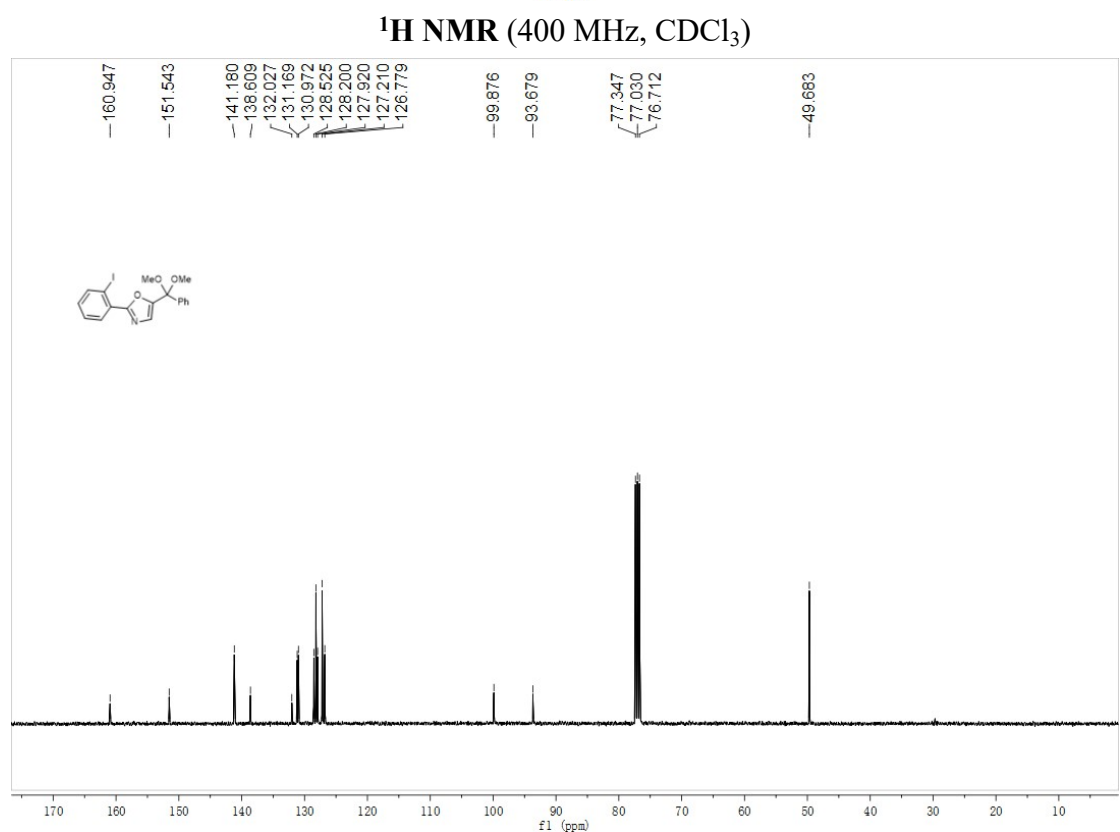
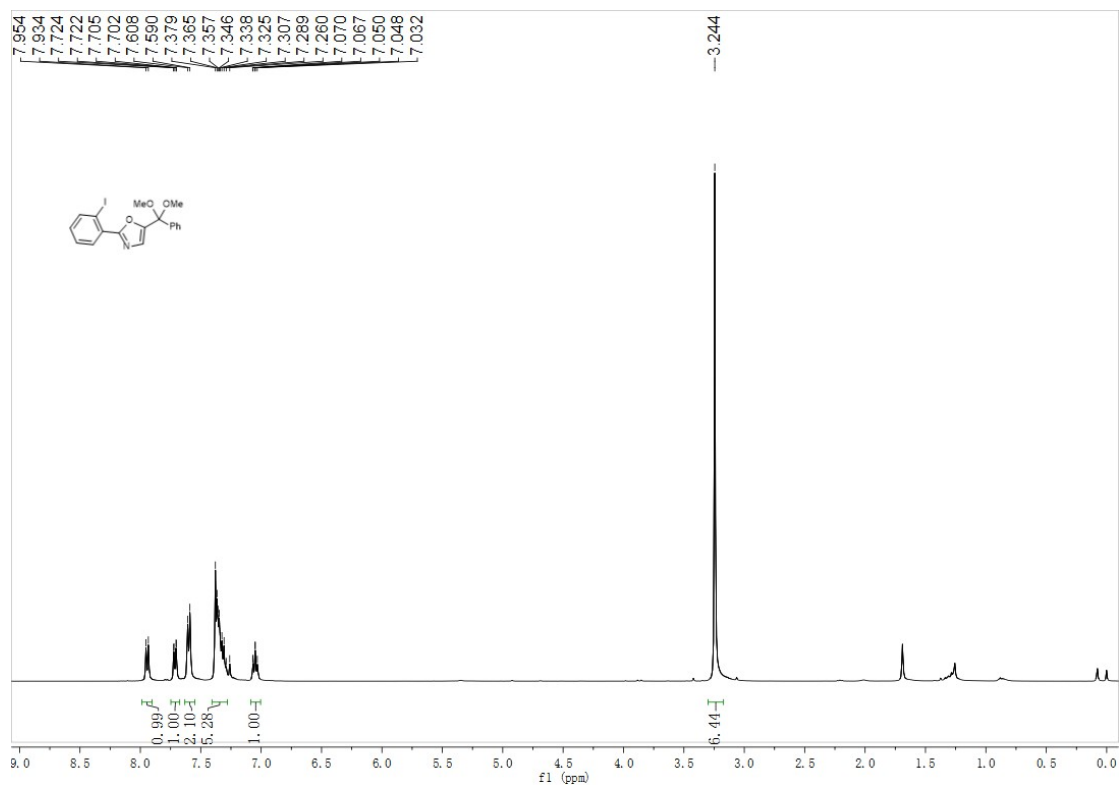


^{19}F NMR (376 MHz, CDCl_3)

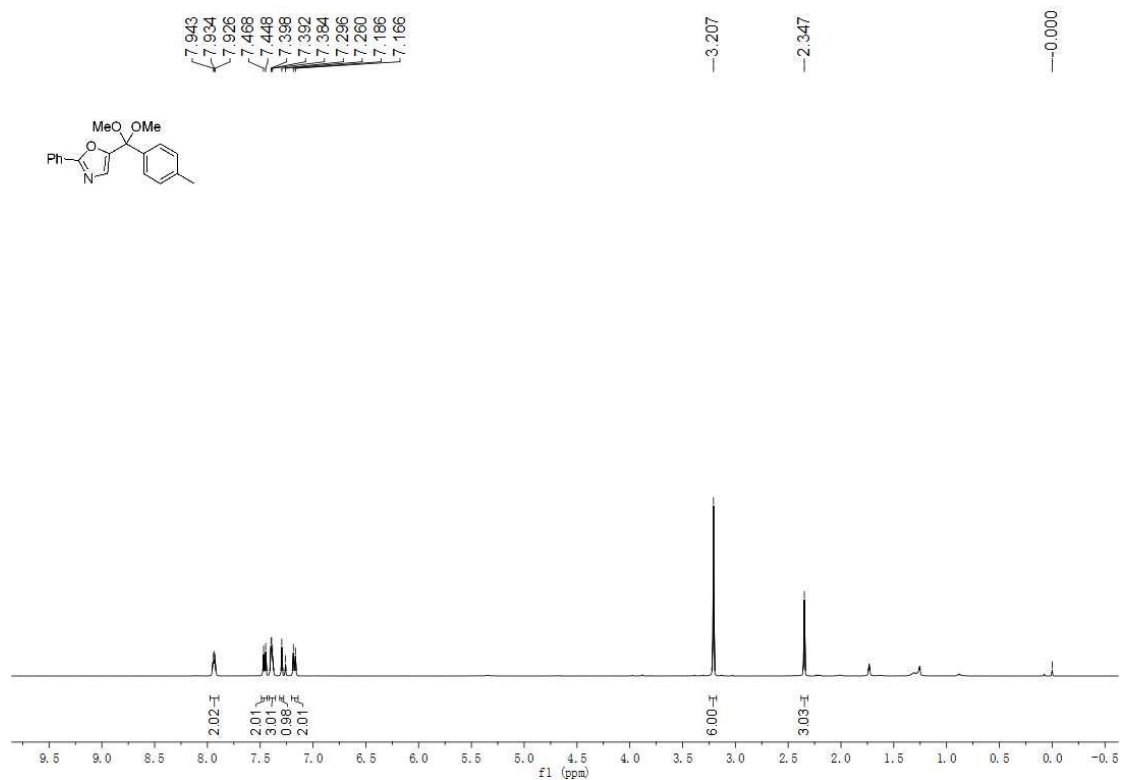
2-(2-Bromophenyl)-5-(dimethoxy(phenyl)methyl)oxazole (2i):



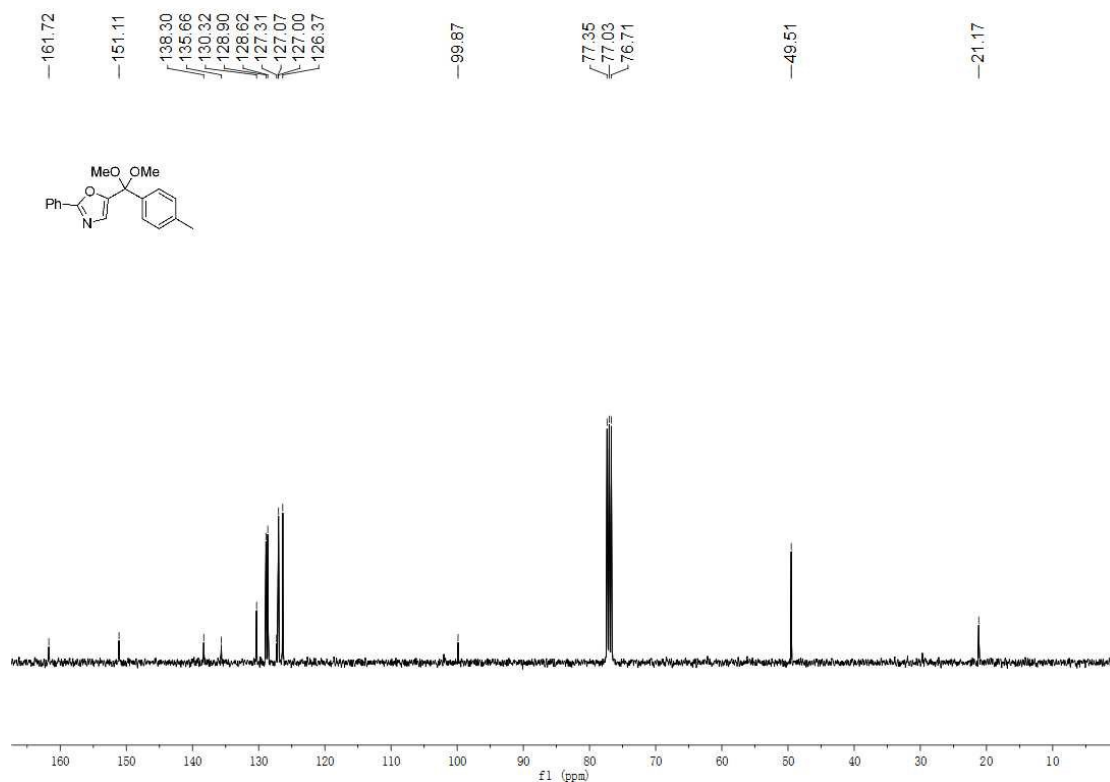
5-(Dimethoxy(phenyl)methyl)-2-(2-iodophenyl)oxazole (2j):



5-(Dimethoxy(p-tolyl)methyl)-2-phenyloxazole (2k):

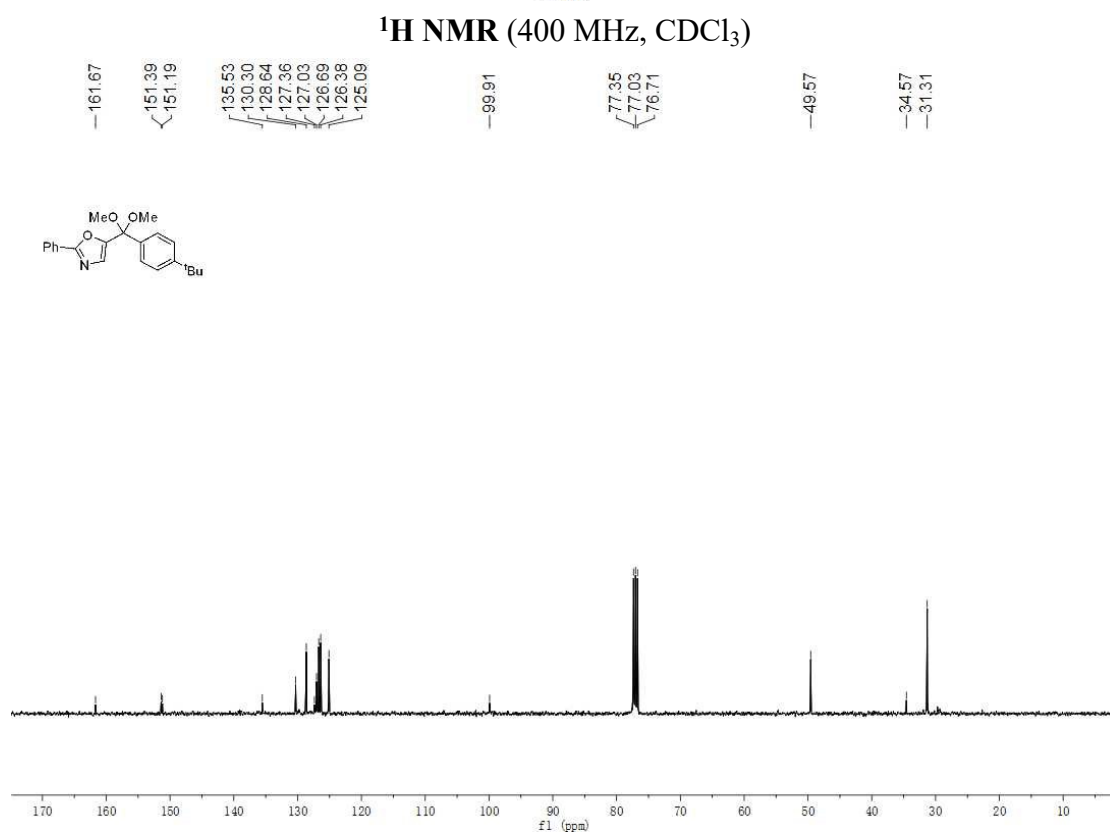
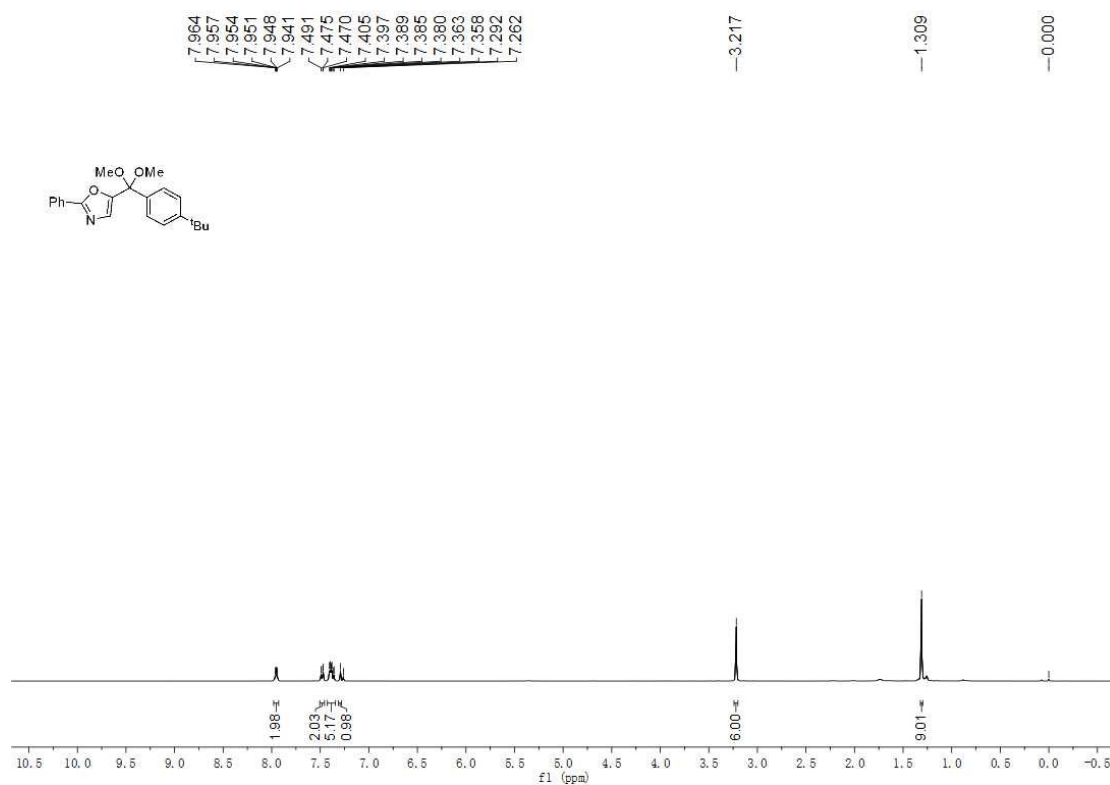


¹H NMR (400 MHz, CDCl₃)

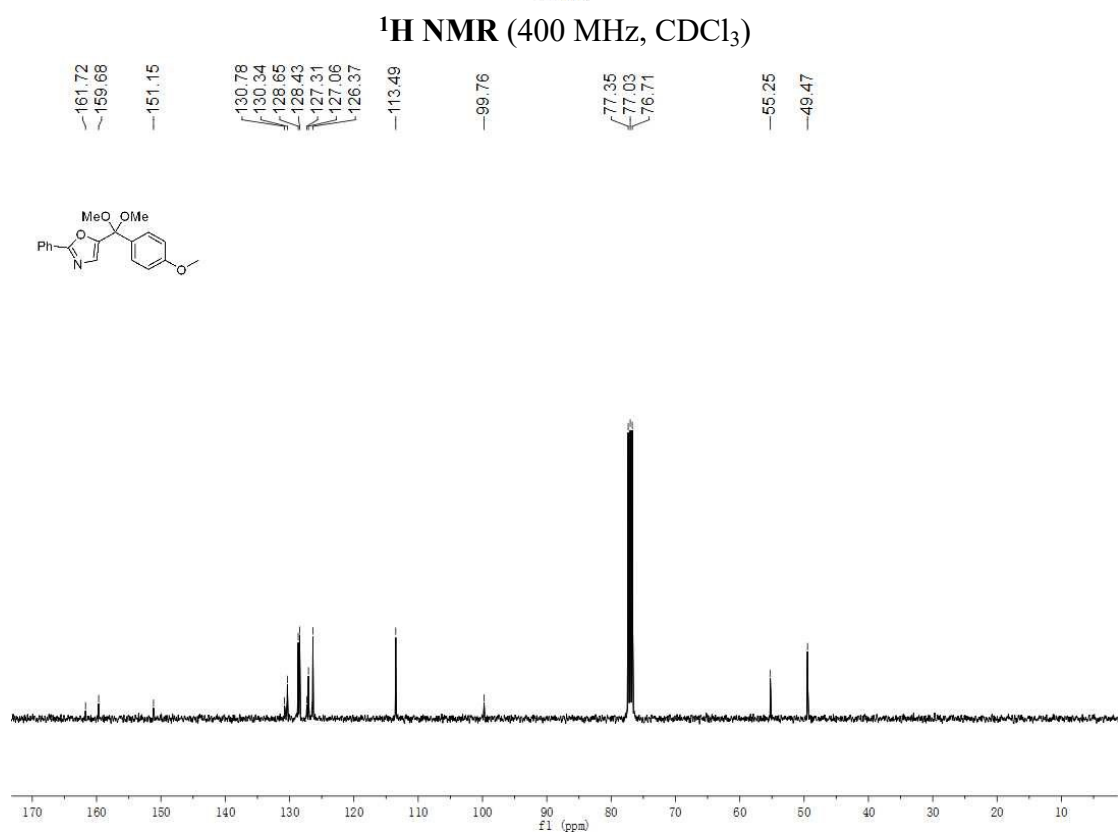
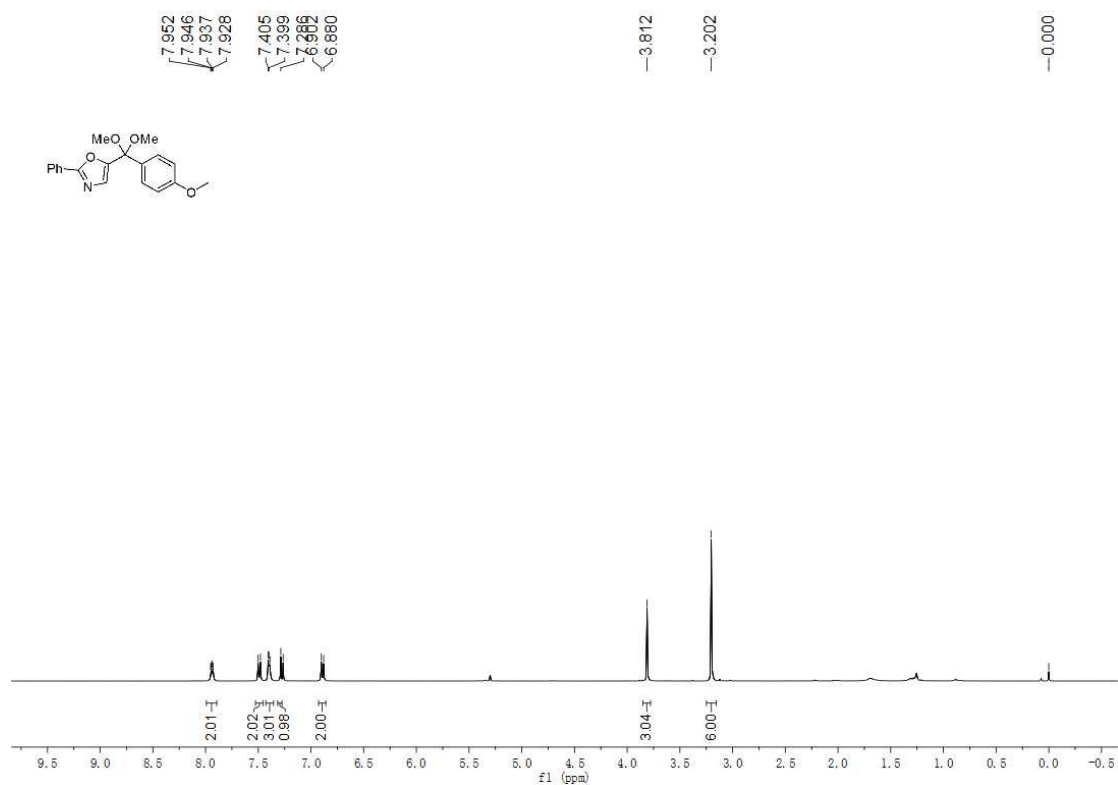


¹³C NMR (100 MHz, CDCl₃)

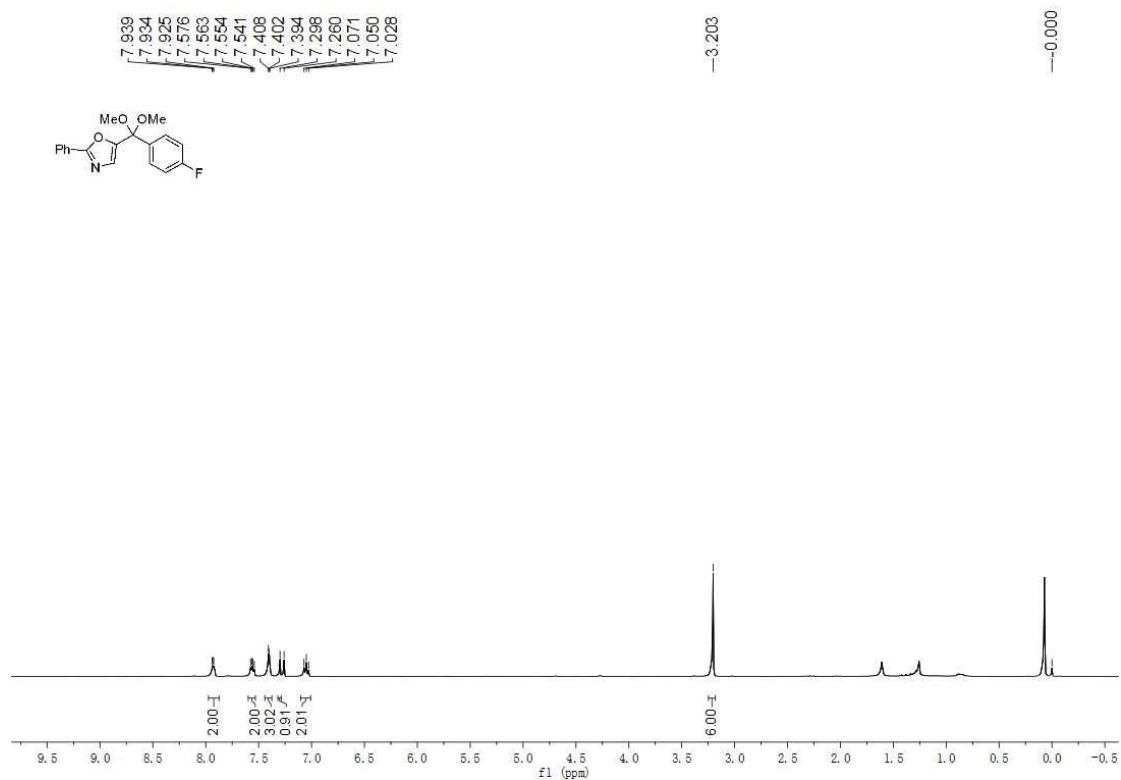
5-((4-(*tert*-Butyl)phenyl)dimethoxymethyl)-2-phenyloxazole(2l):



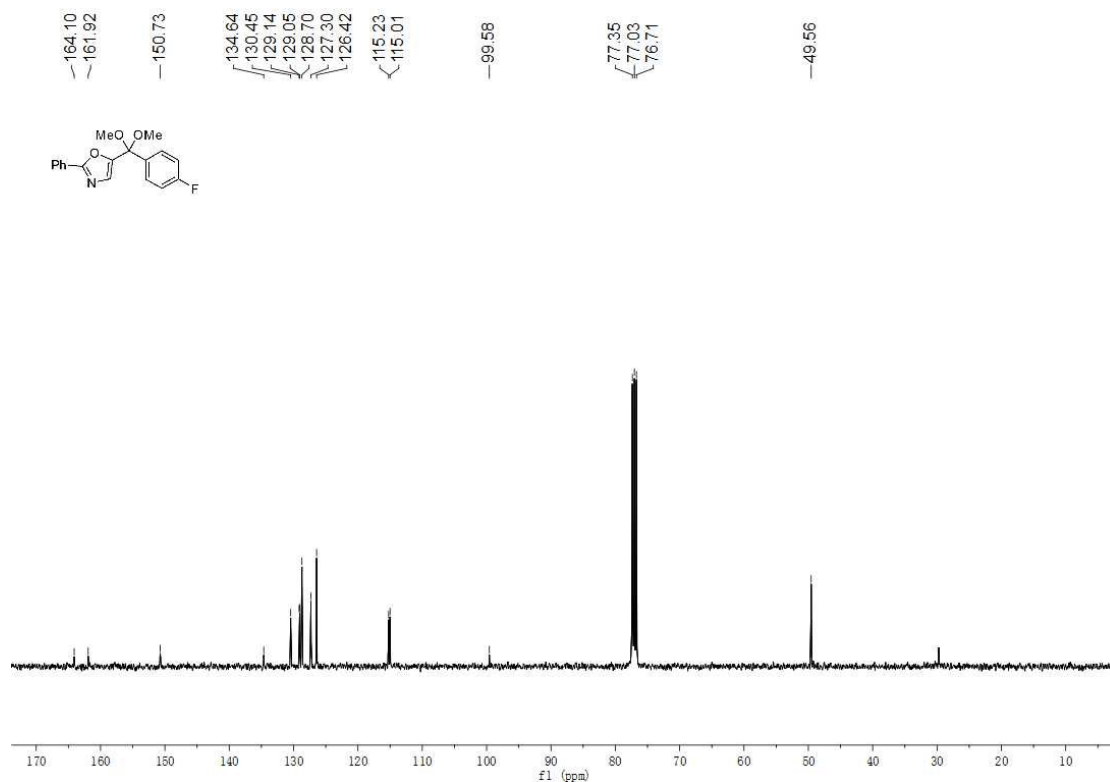
5-(Dimethoxy(4-methoxyphenyl)methyl)-2-phenyloxazole (2m):



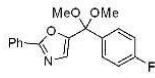
5-((4-Fluorophenyl)dimethoxymethyl)-2-phenyloxazole(2n):



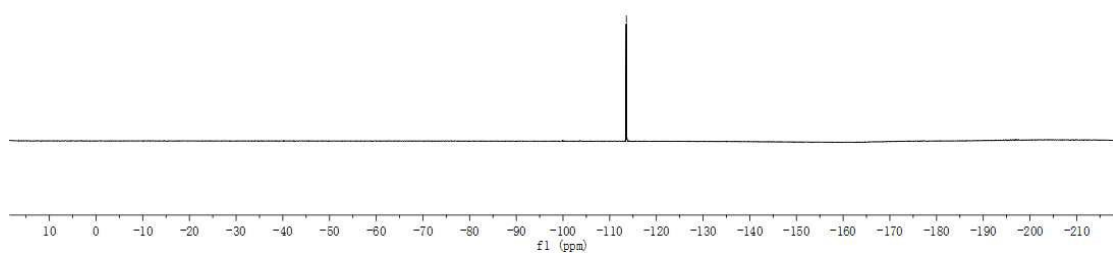
¹H NMR (400 MHz, CDCl₃)



¹³C NMR (100 MHz, CDCl₃)

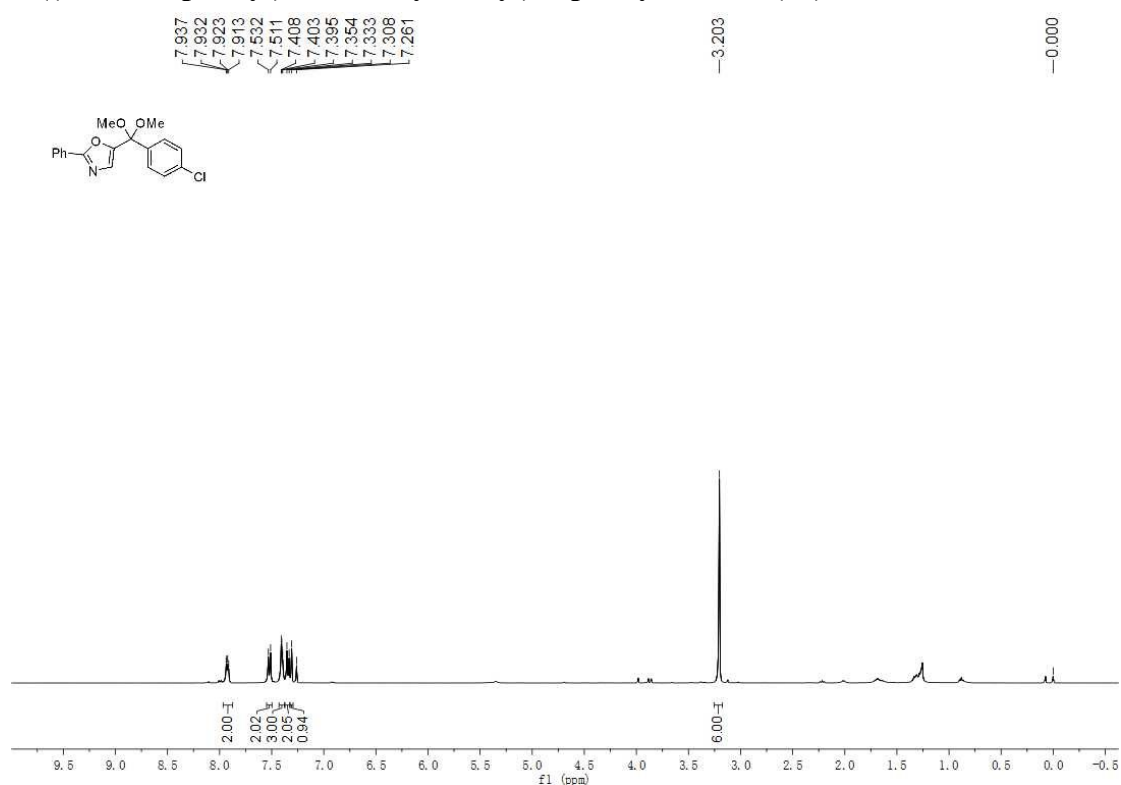


--113.57

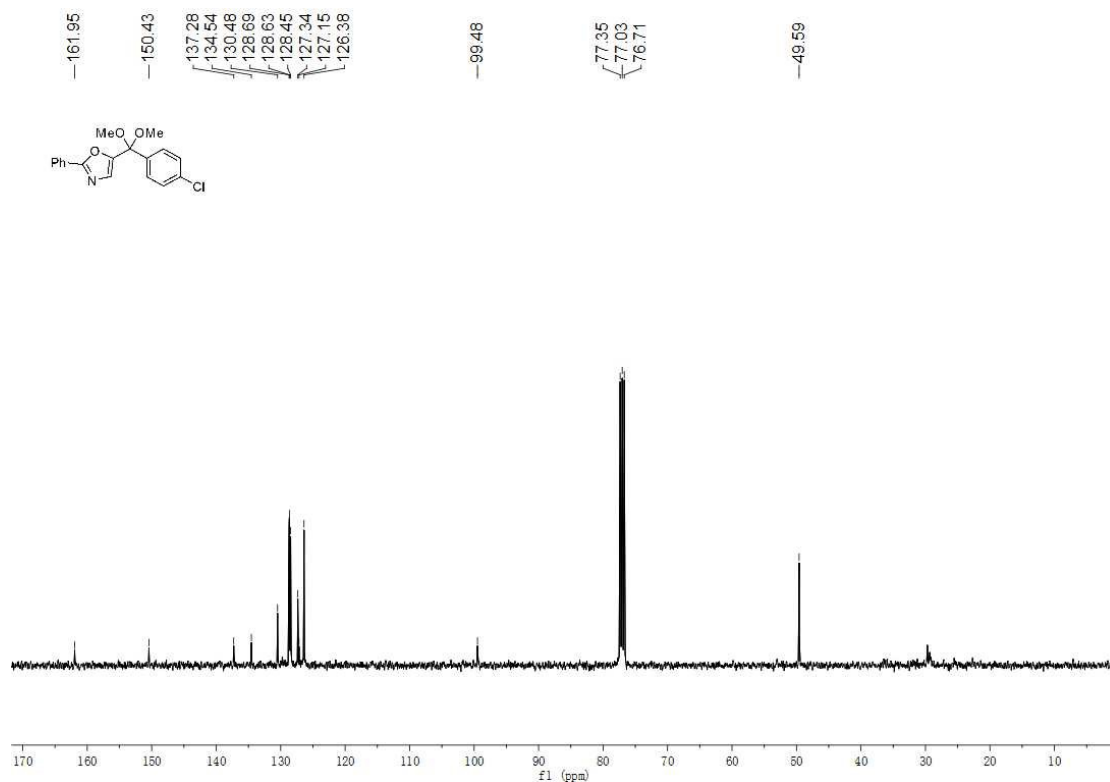


^{19}F NMR (376 MHz, CDCl_3)

5-((4-Chlorophenyl)dimethoxymethyl)-2-phenyloxazole (2o):

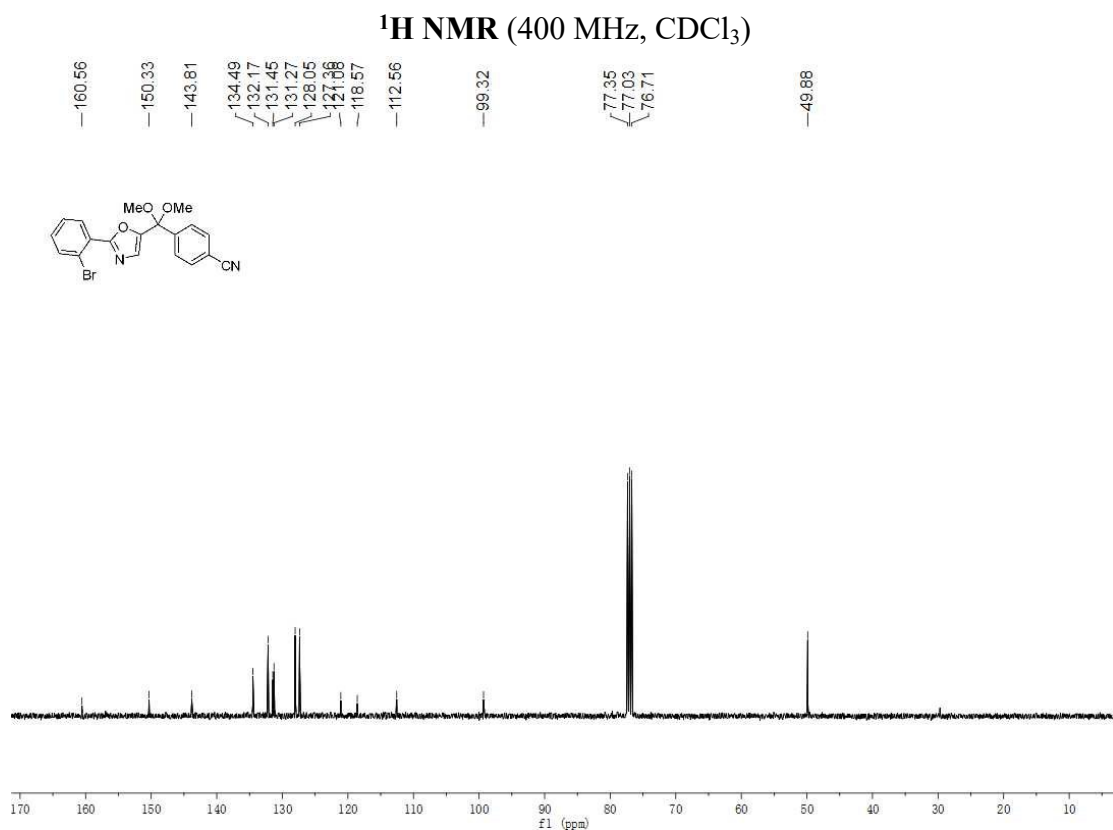
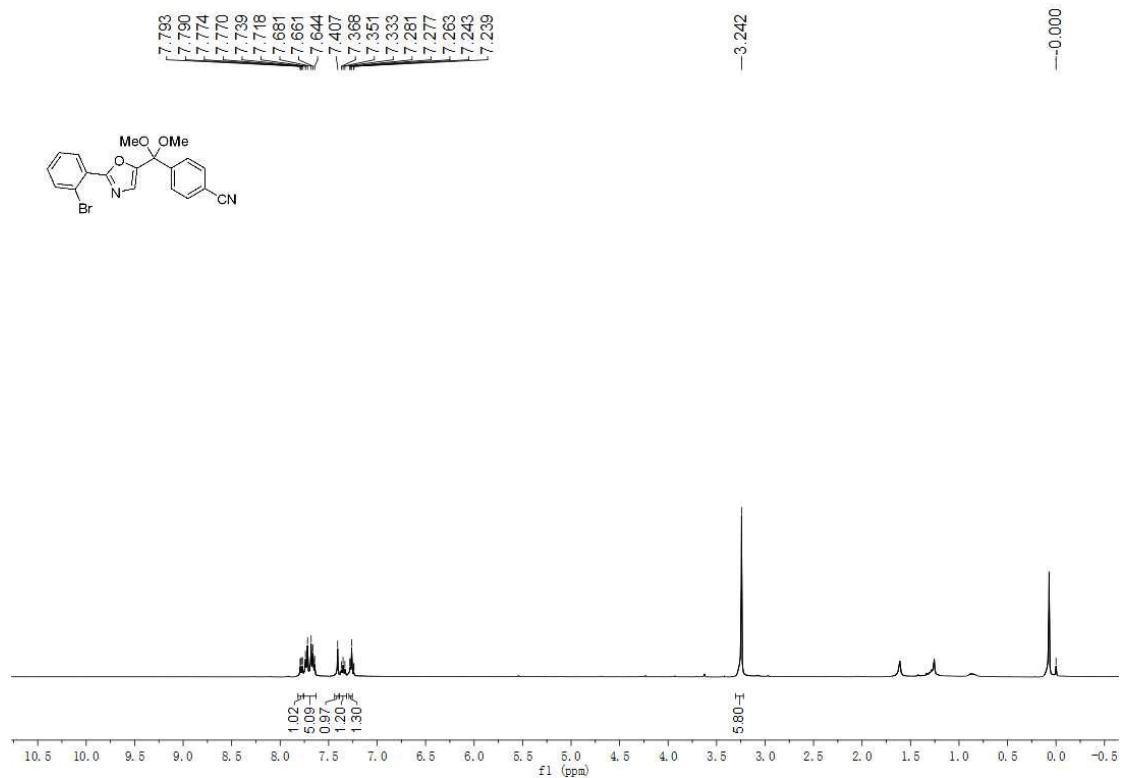


¹H NMR (400 MHz, CDCl₃)

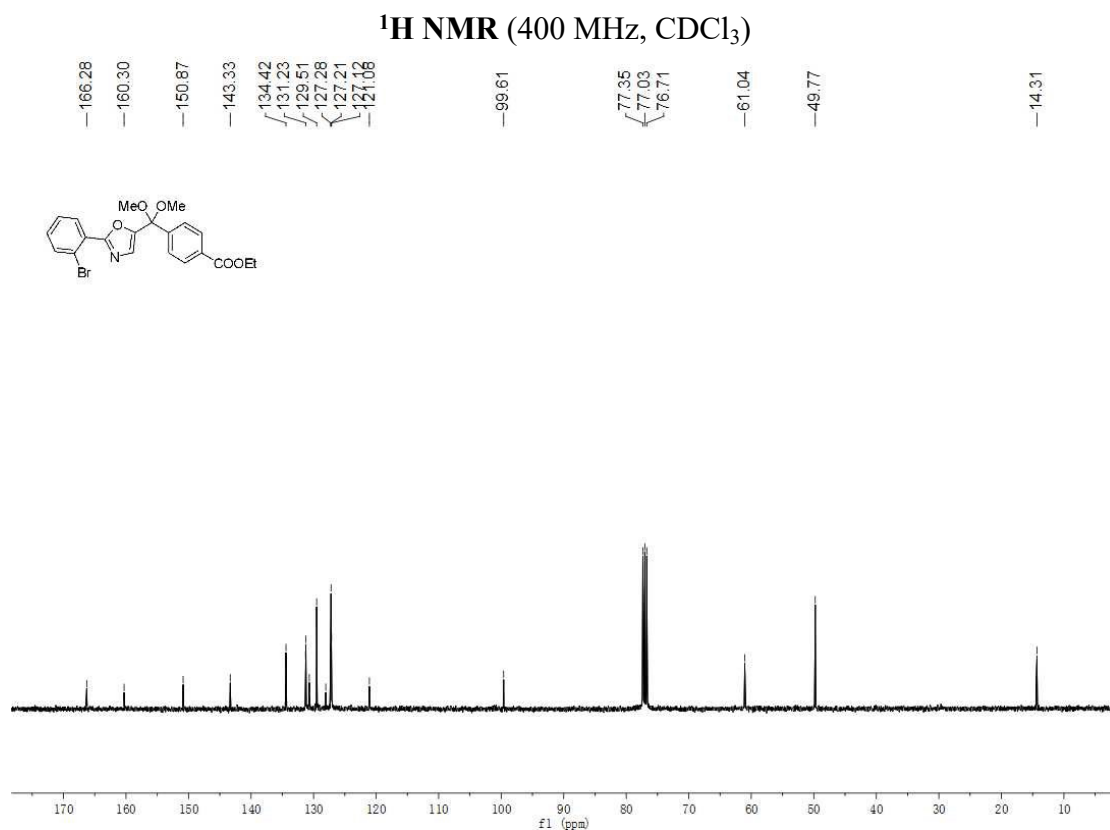
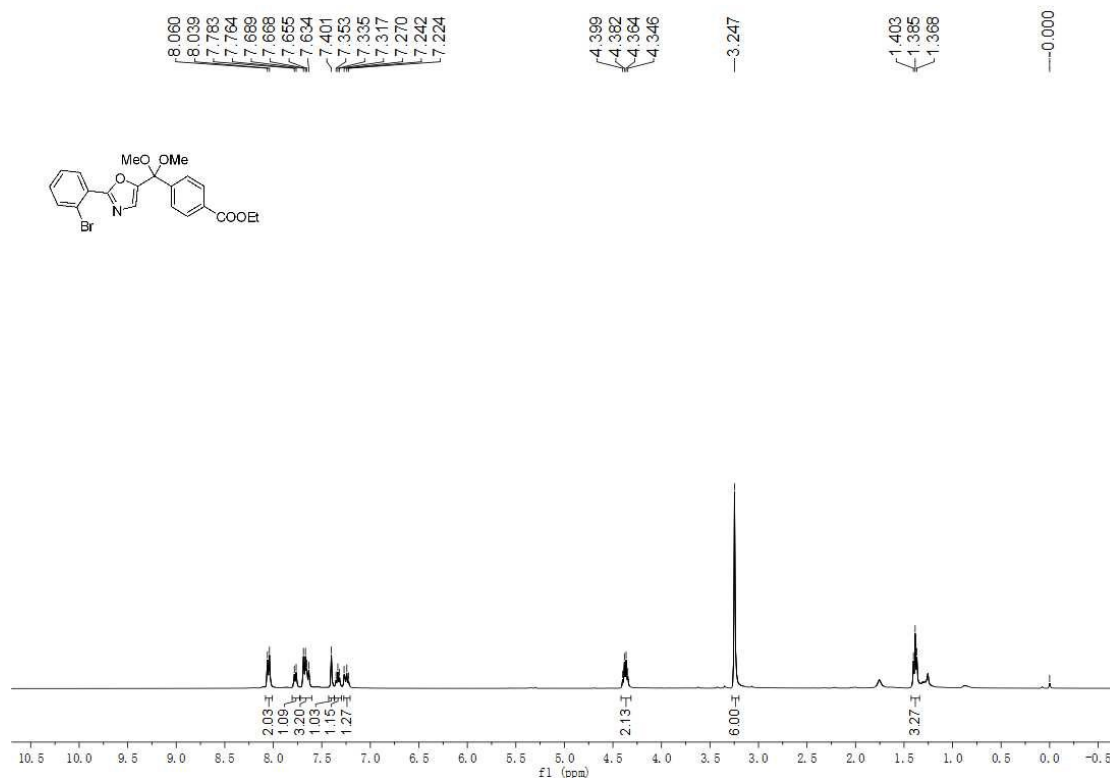


¹³C NMR (100 MHz, CDCl₃)

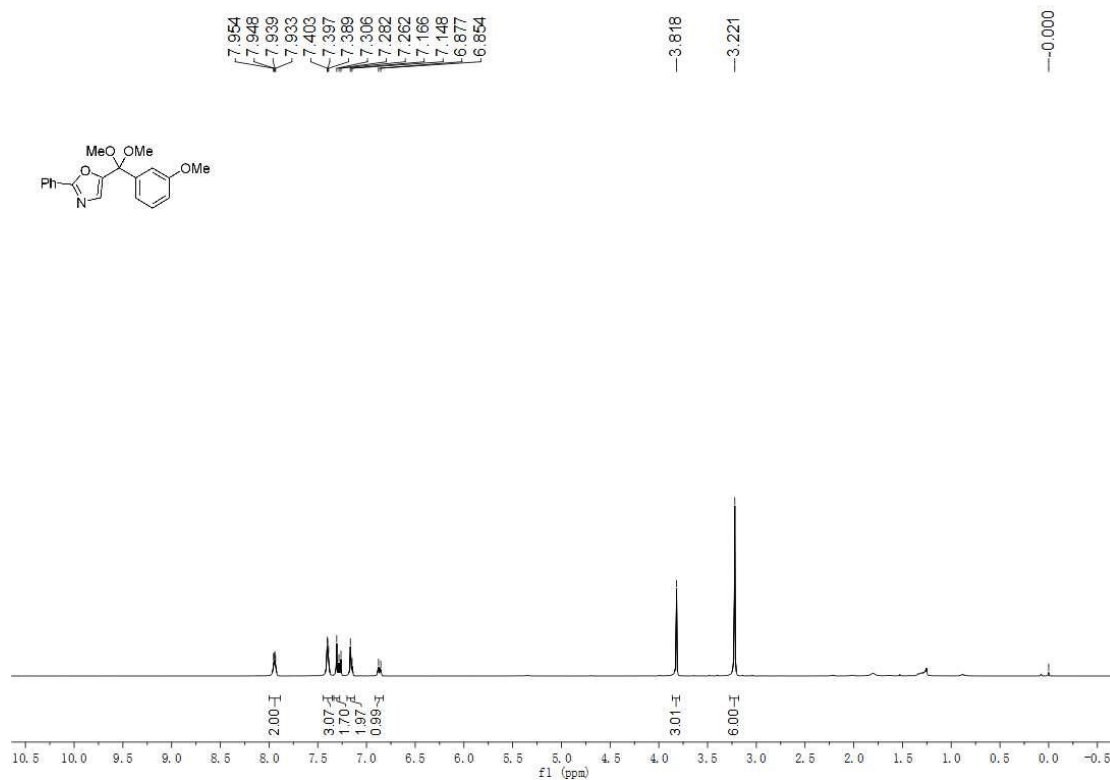
4-((2-(2-Bromophenyl)oxazol-5-yl)dimethoxymethyl)benzonitrile (2p):



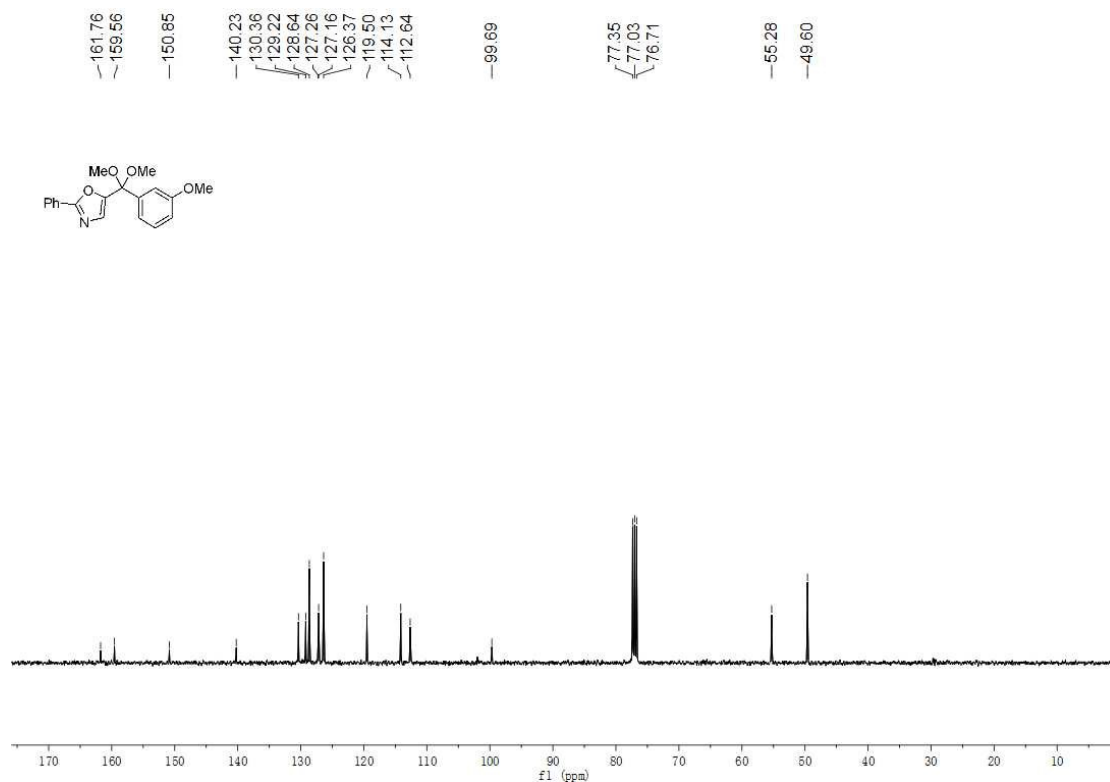
Ethyl 4-((2-(2-bromophenyl)oxazol-5-yl)dimethoxymethyl)benzoate (2q):



5-(Dimethoxy(3-methoxyphenyl)methyl)-2-phenyloxazole (2r):

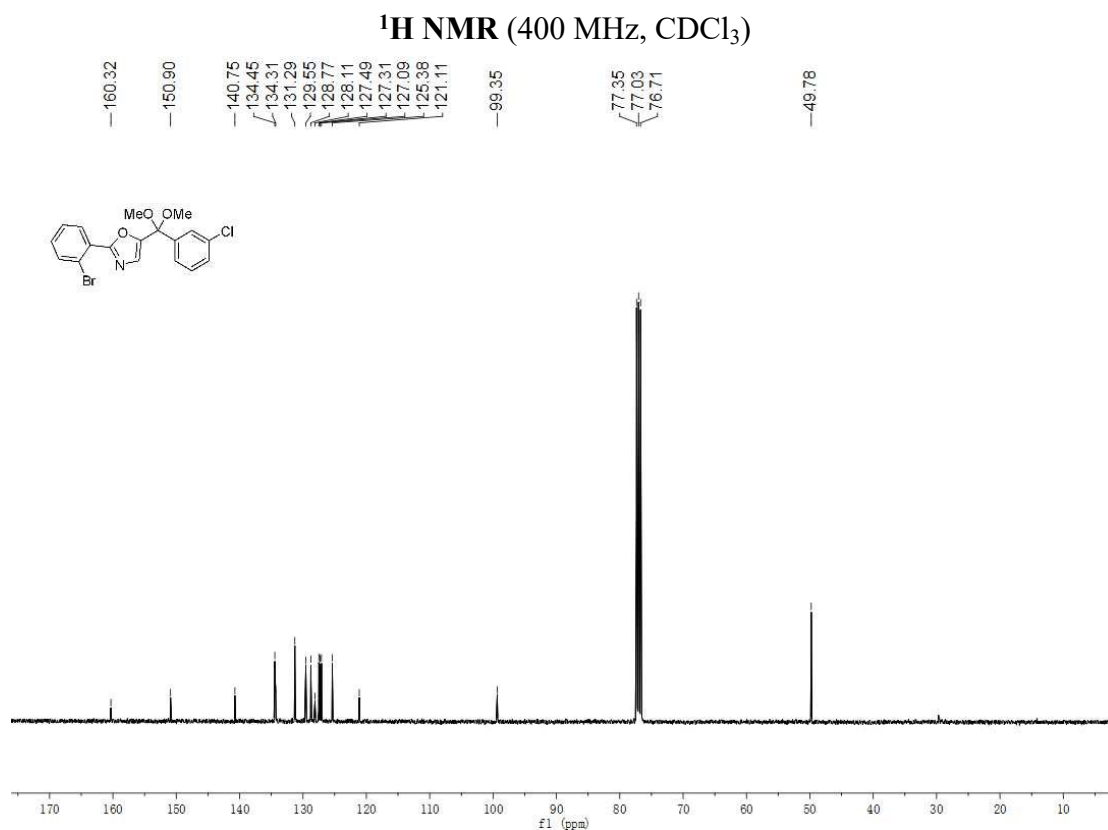
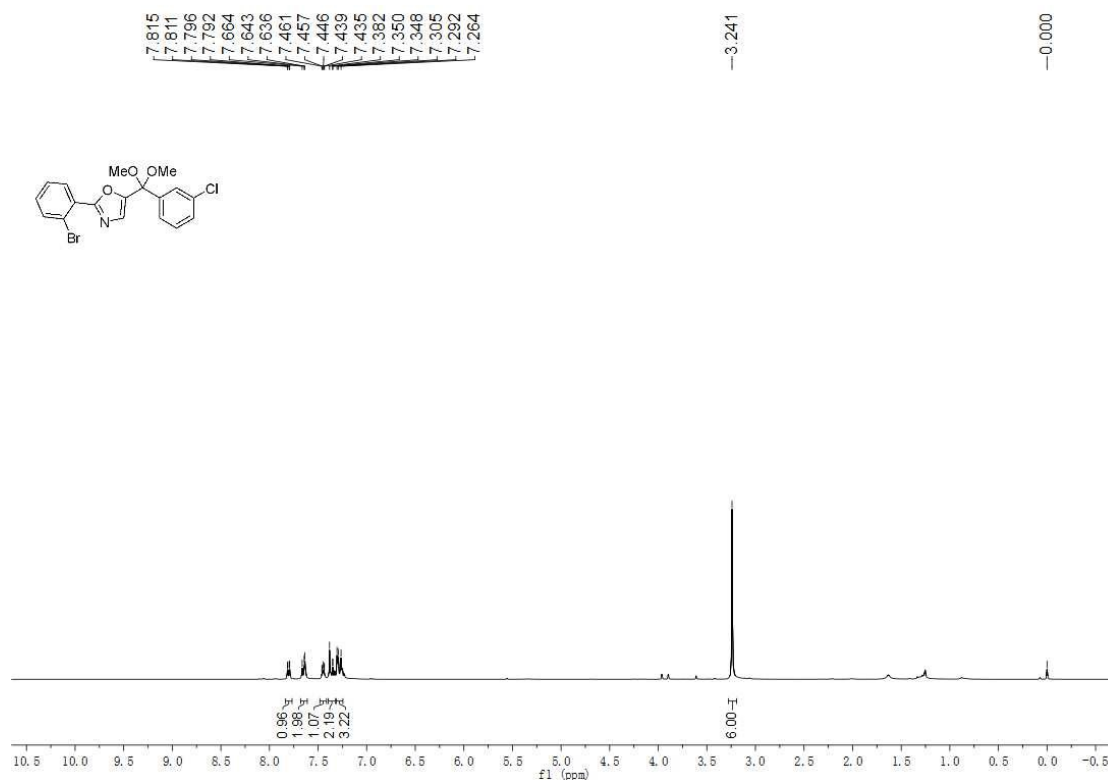


¹H NMR (400 MHz, CDCl₃)

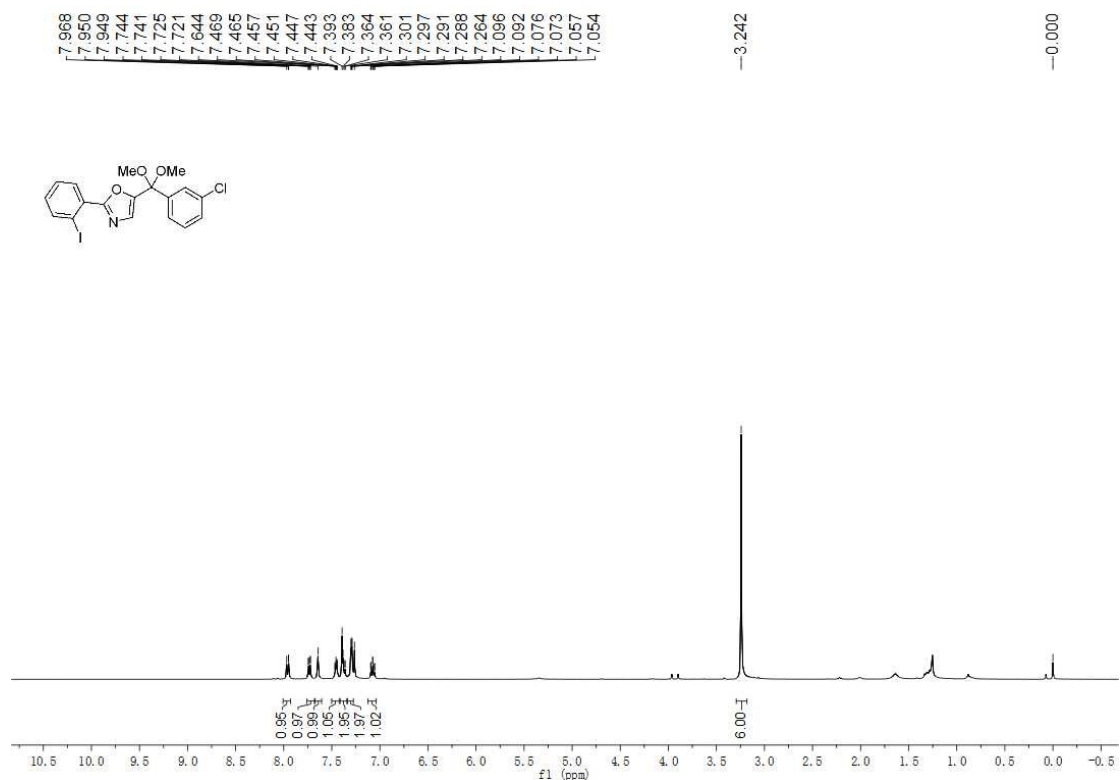


¹³C NMR (100 MHz, CDCl₃)

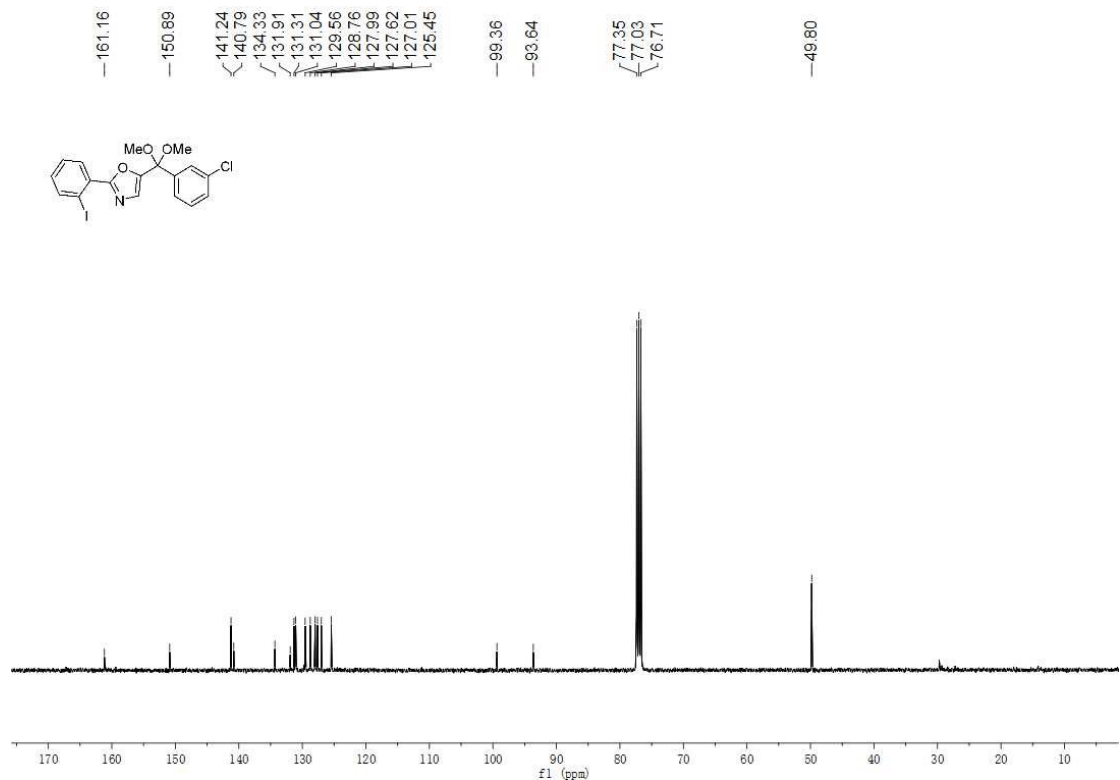
2-(2-Bromophenyl)-5-((3-chlorophenyl)dimethoxymethyl)oxazole (2s):



5-((3-Chlorophenyl)dimethoxymethyl)-2-(2-iodophenyl)oxazole (2t):

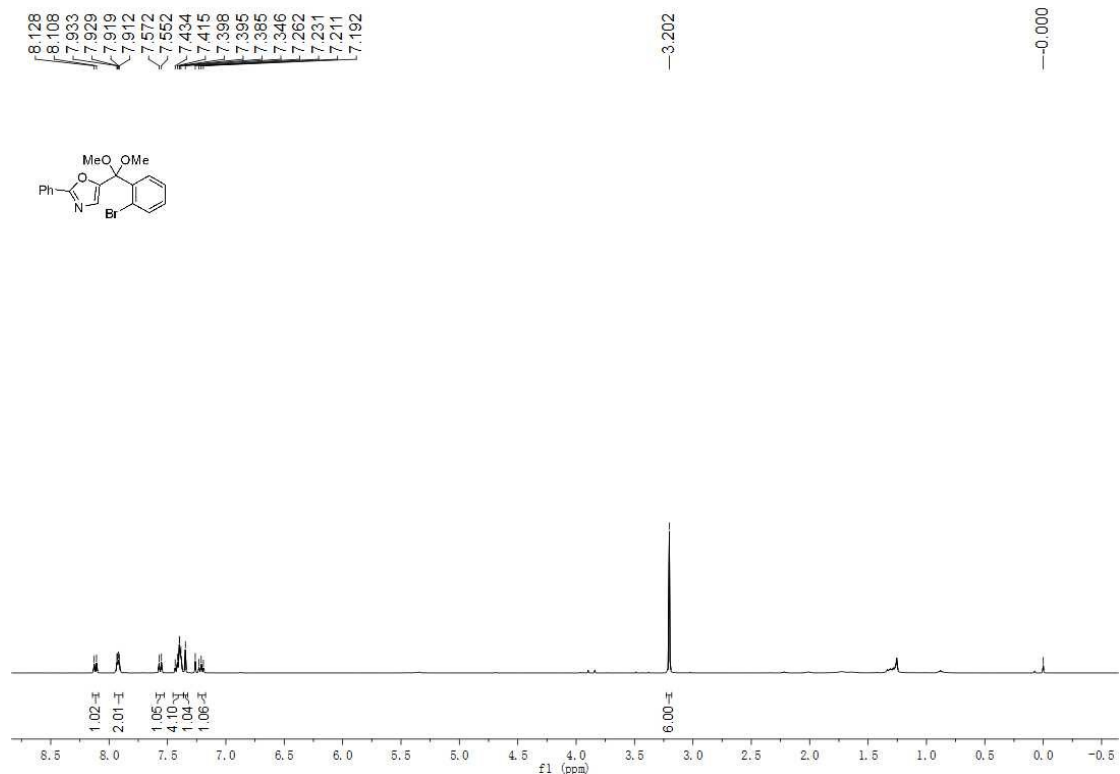


¹H NMR (400 MHz, CDCl₃)

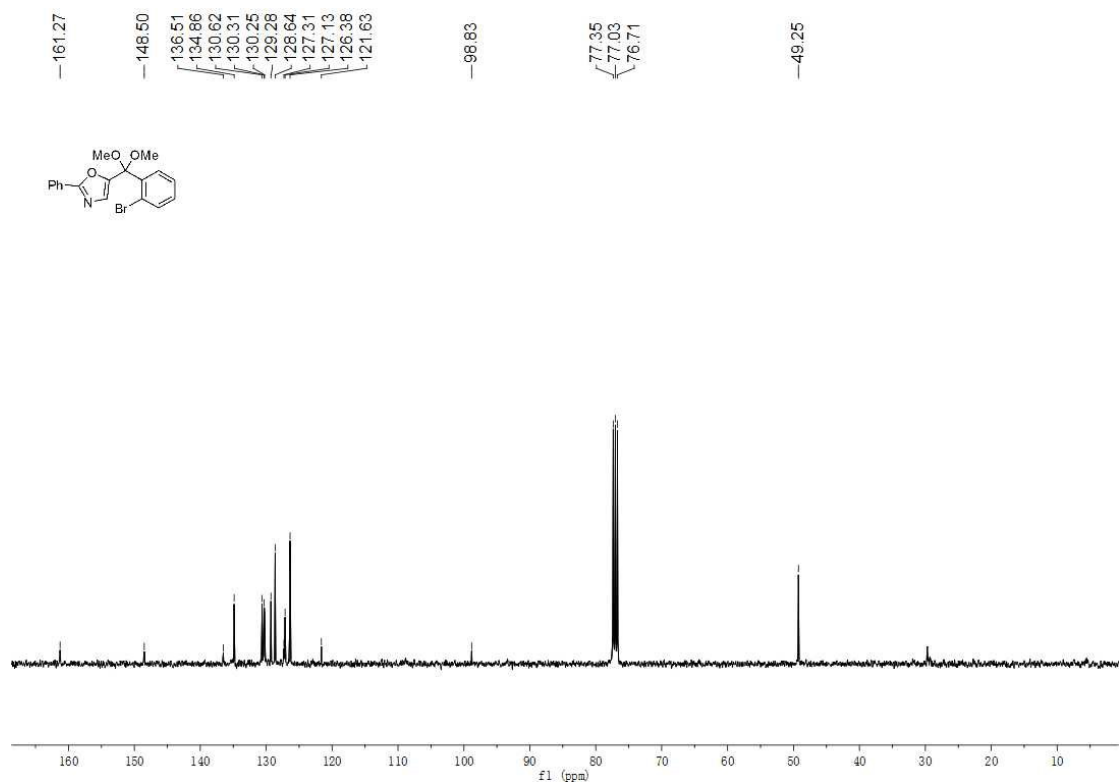


¹³C NMR (100 MHz, CDCl₃)

5-((2-Bromophenyl)dimethoxymethyl)-2-phenyloxazole (2u):

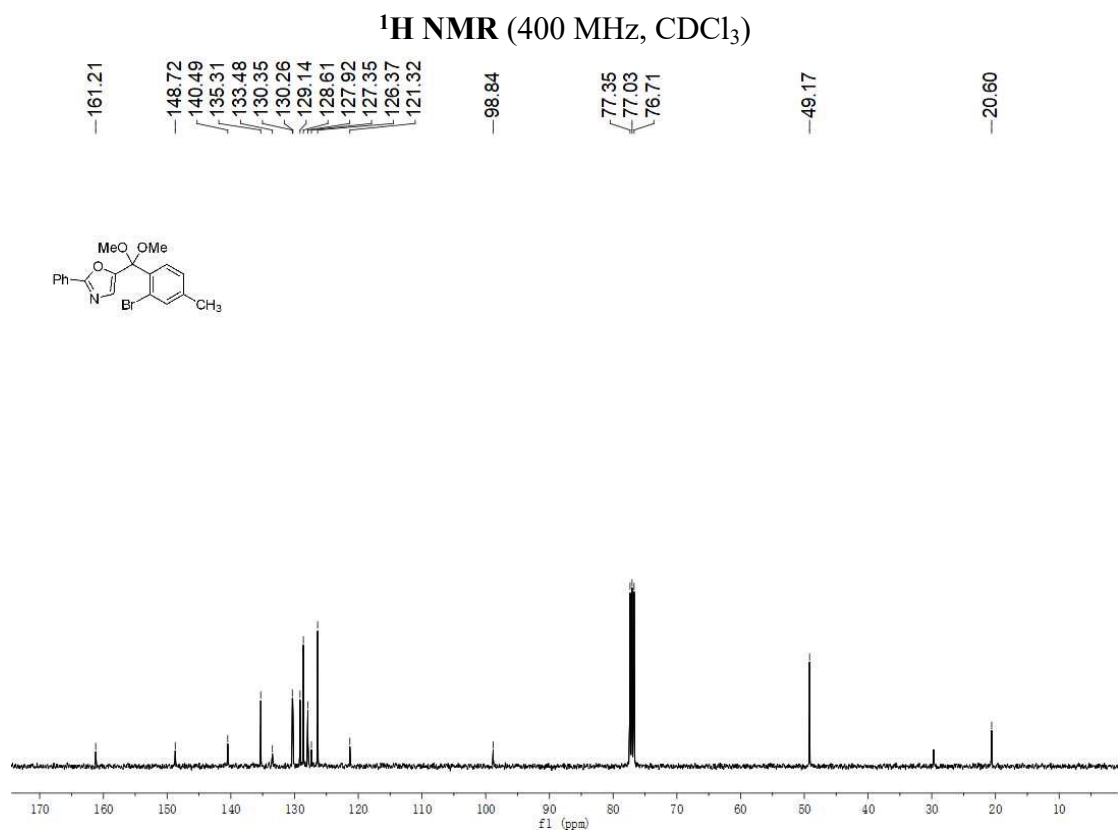
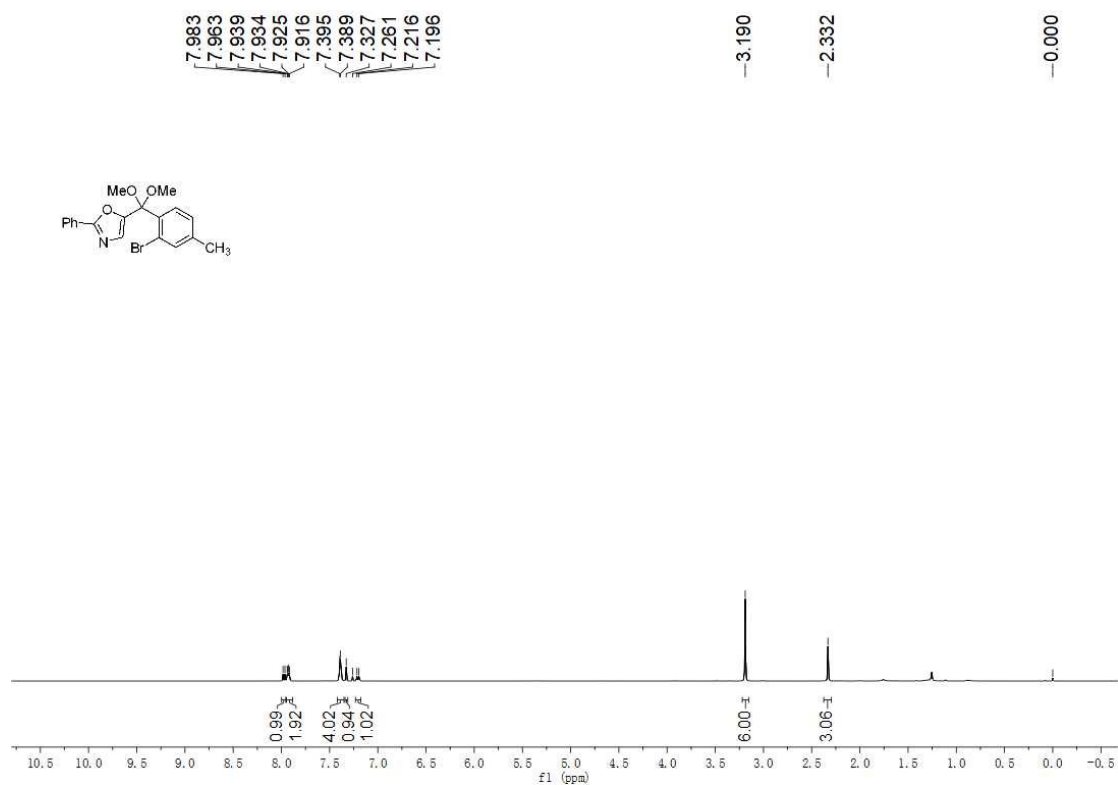


¹H NMR (400 MHz, CDCl₃)

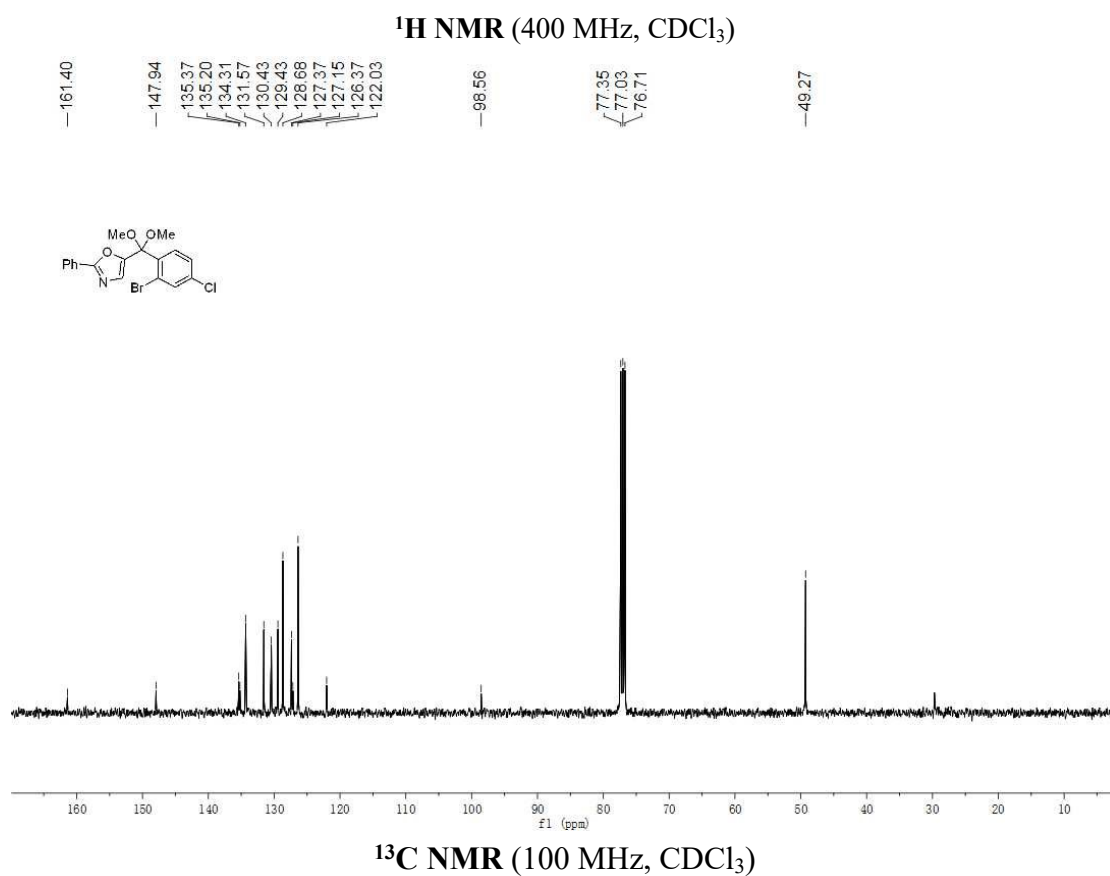
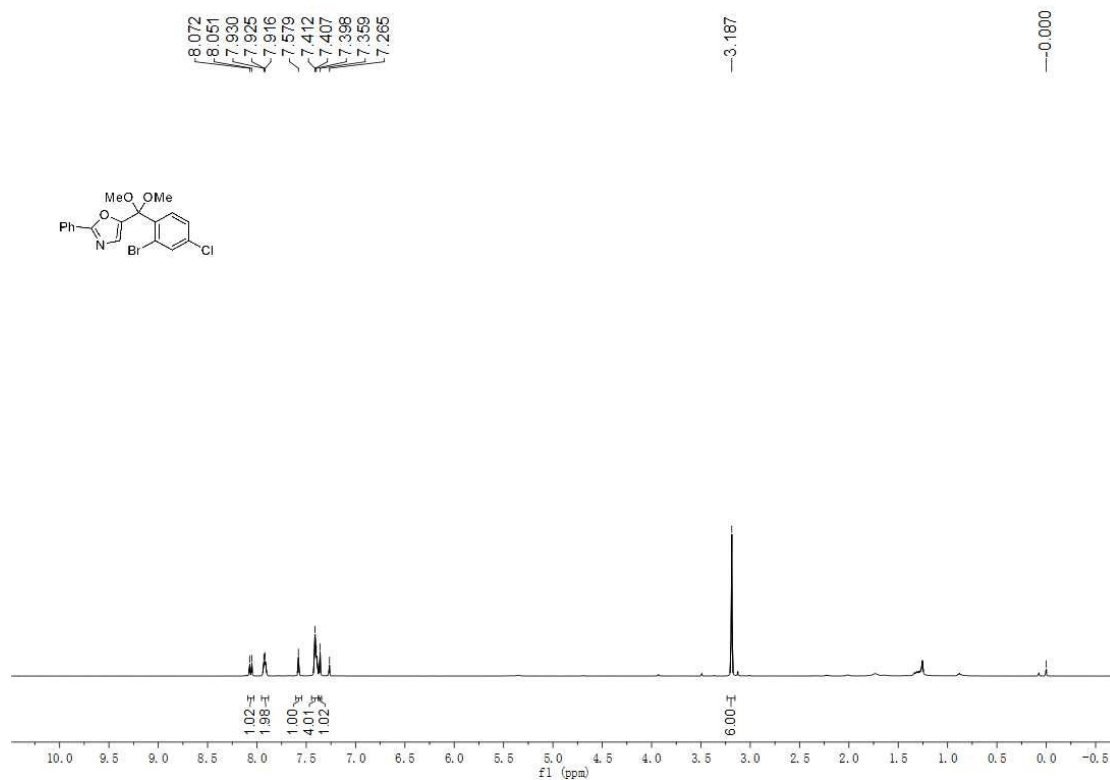


¹³C NMR (100 MHz, CDCl₃)

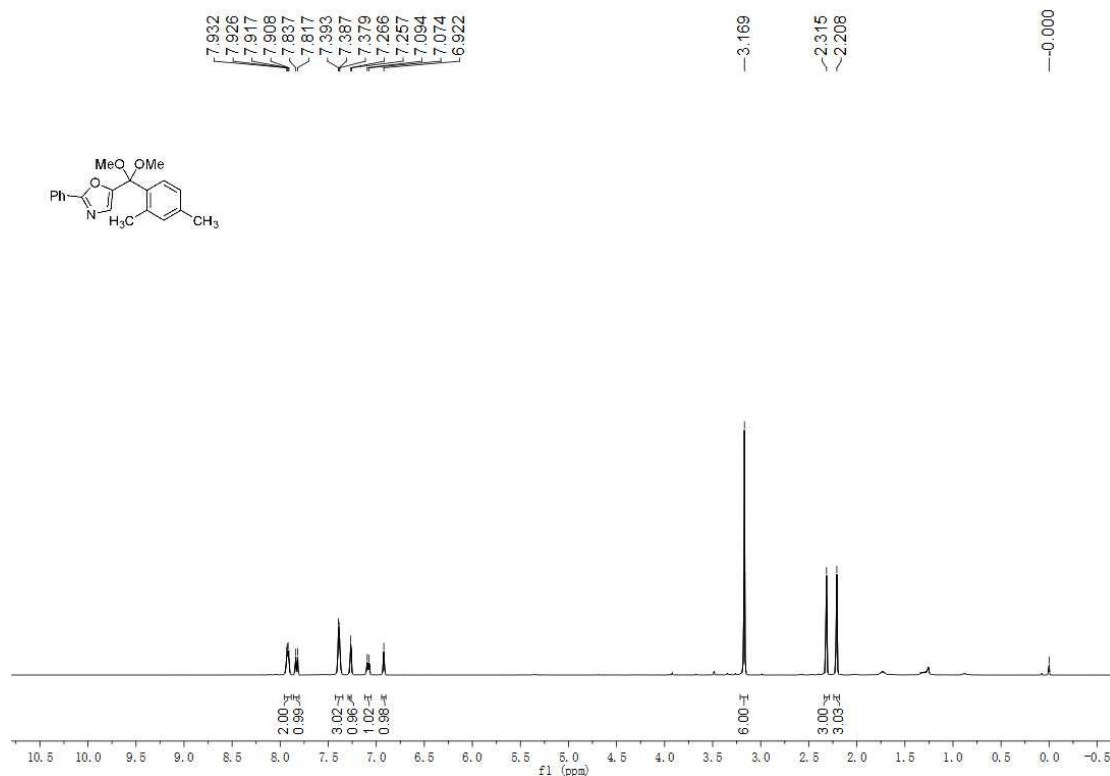
5-((2-Bromo-4-methylphenyl)dimethoxymethyl)-2-phenyloxazole (2v):



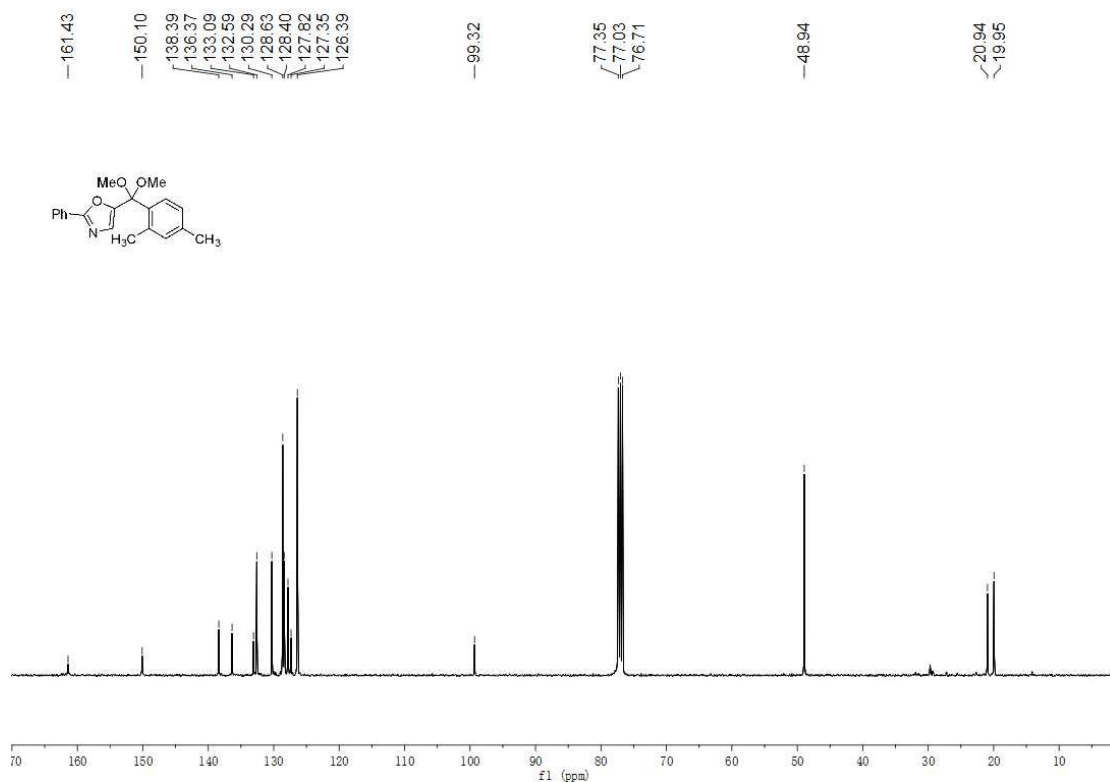
5-((2-Bromo-4-chlorophenyl)dimethoxymethyl)-2-phenyloxazole (2w):



5-((2,4-Dimethylphenyl)dimethoxymethyl)-2-phenyloxazole (2x):

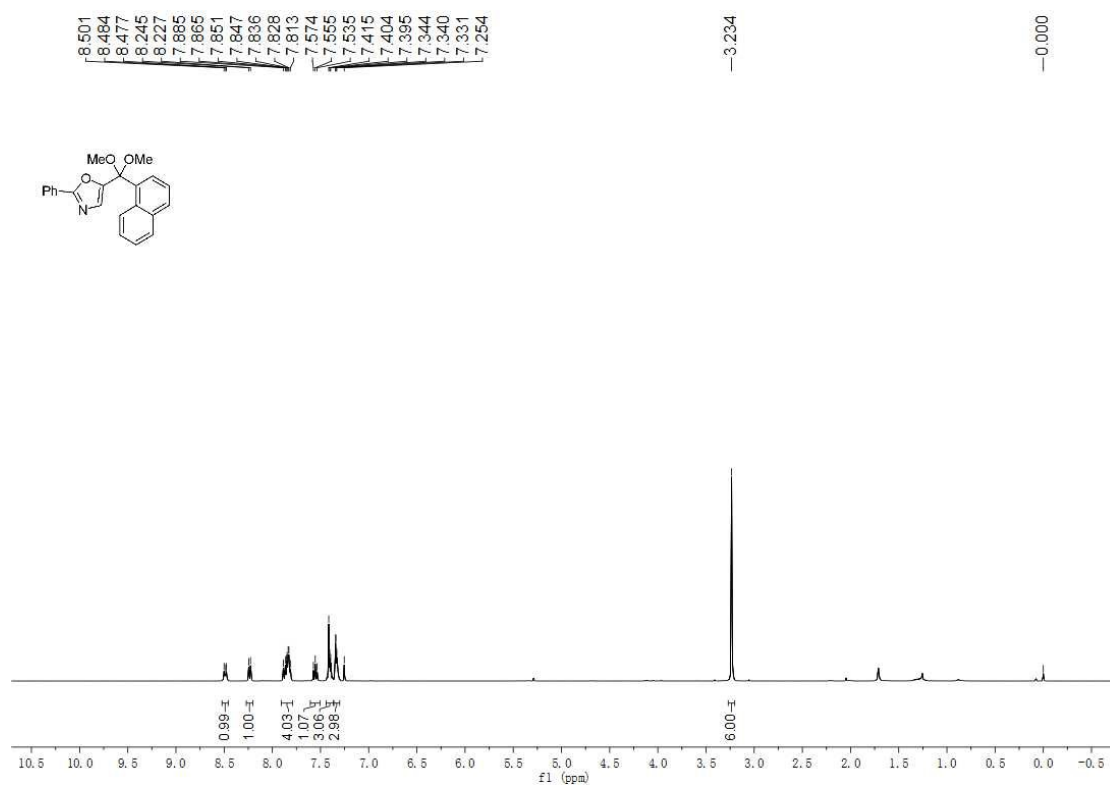


¹H NMR (400 MHz, CDCl₃)

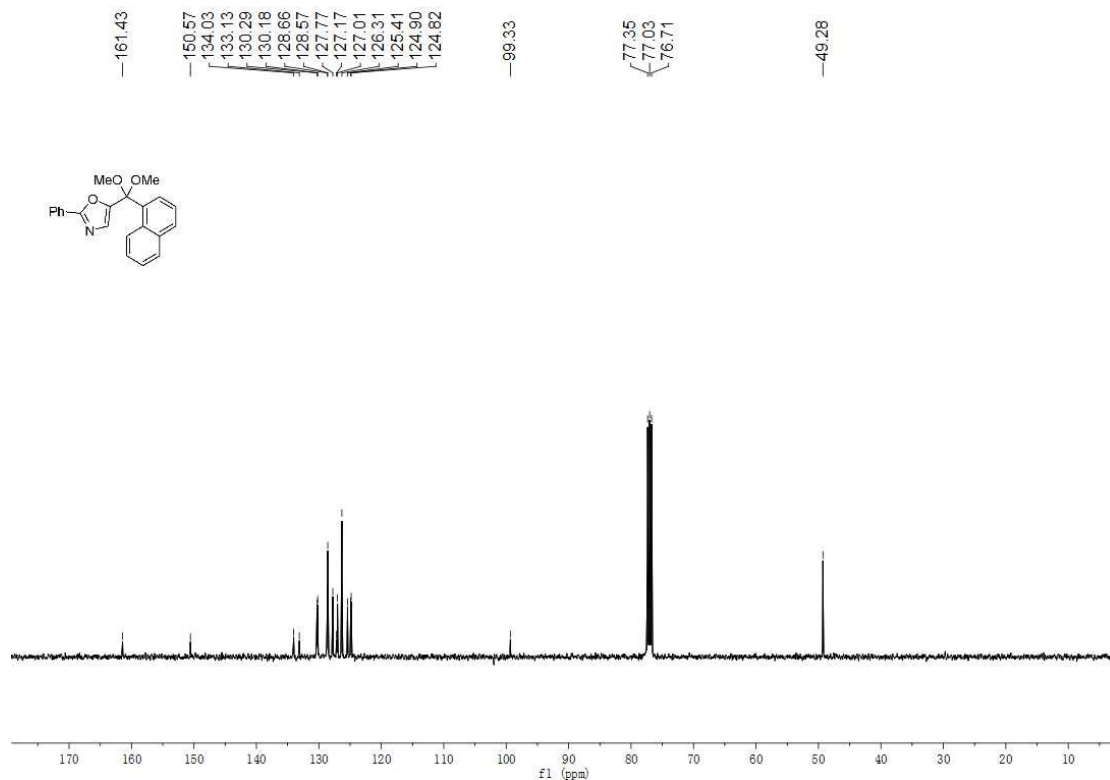


¹³C NMR (100 MHz, CDCl₃)

5-(Dimethoxy(naphthalen-1-yl)methyl)-2-phenyloxazole (2y):

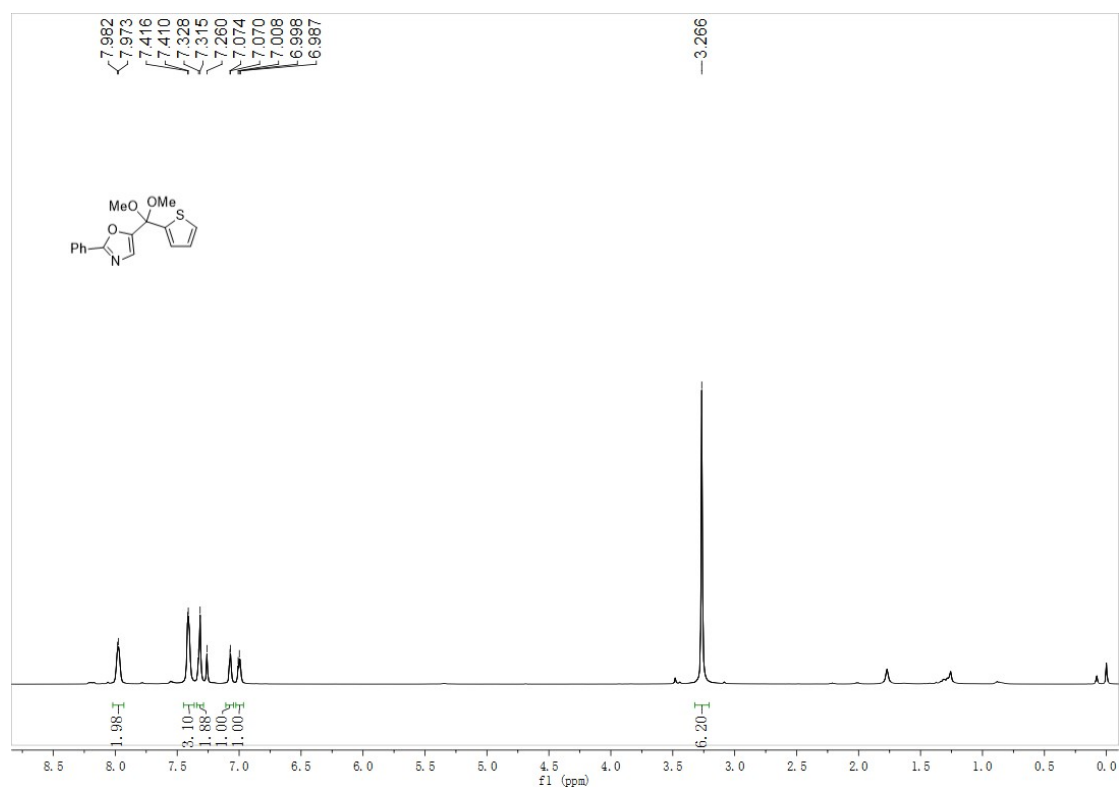


¹H NMR (400 MHz, CDCl₃)

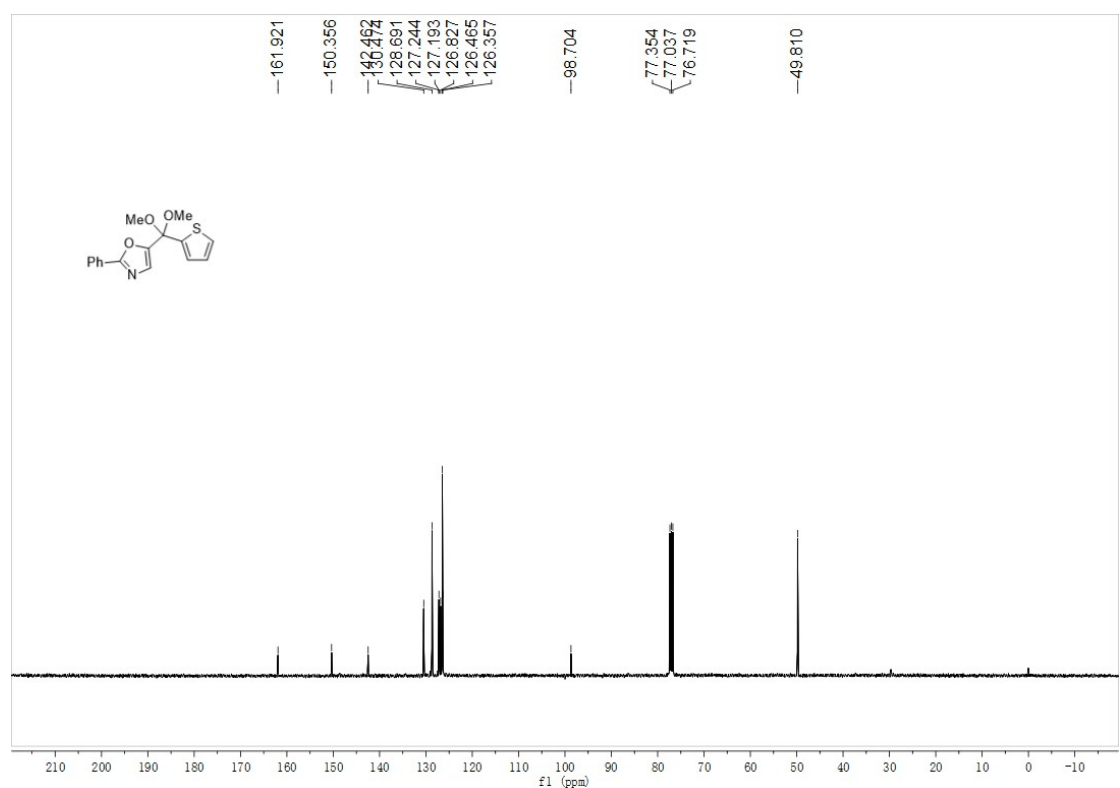


¹³C NMR (100 MHz, CDCl₃)

5-(dimethoxy(thiophen-2-yl)methyl)-2-phenyloxazole(2z):

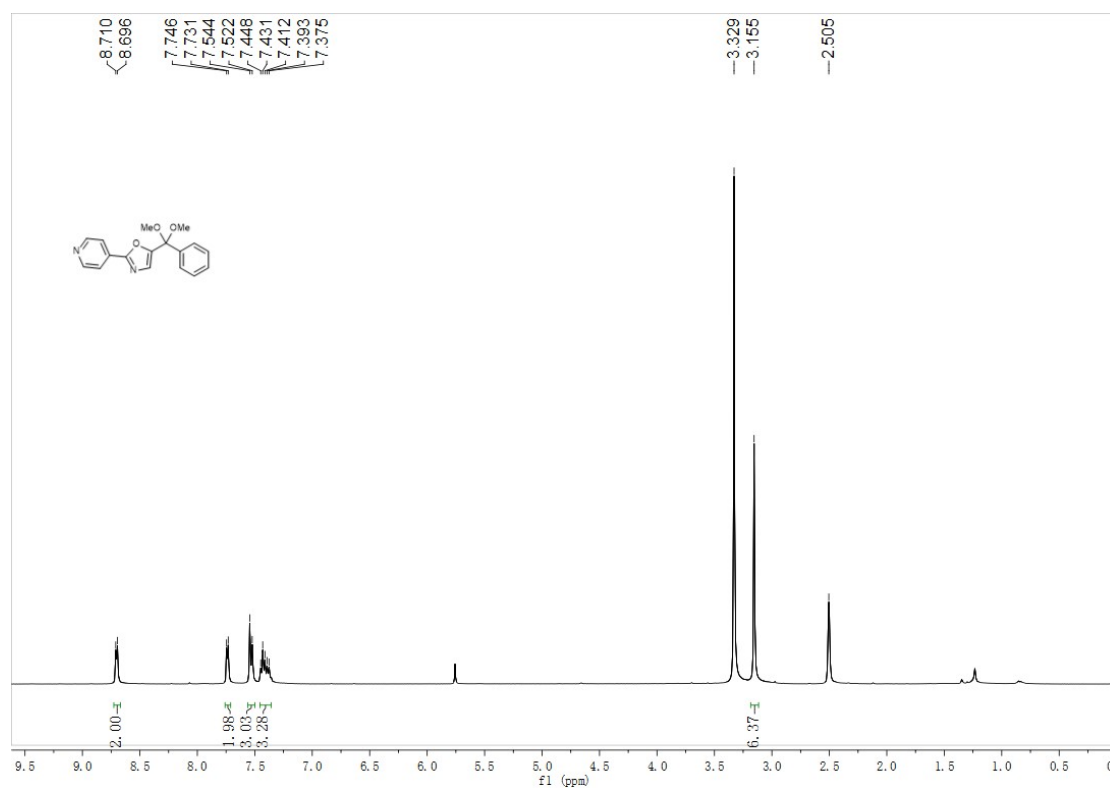


¹H NMR (400 MHz, CDCl₃)

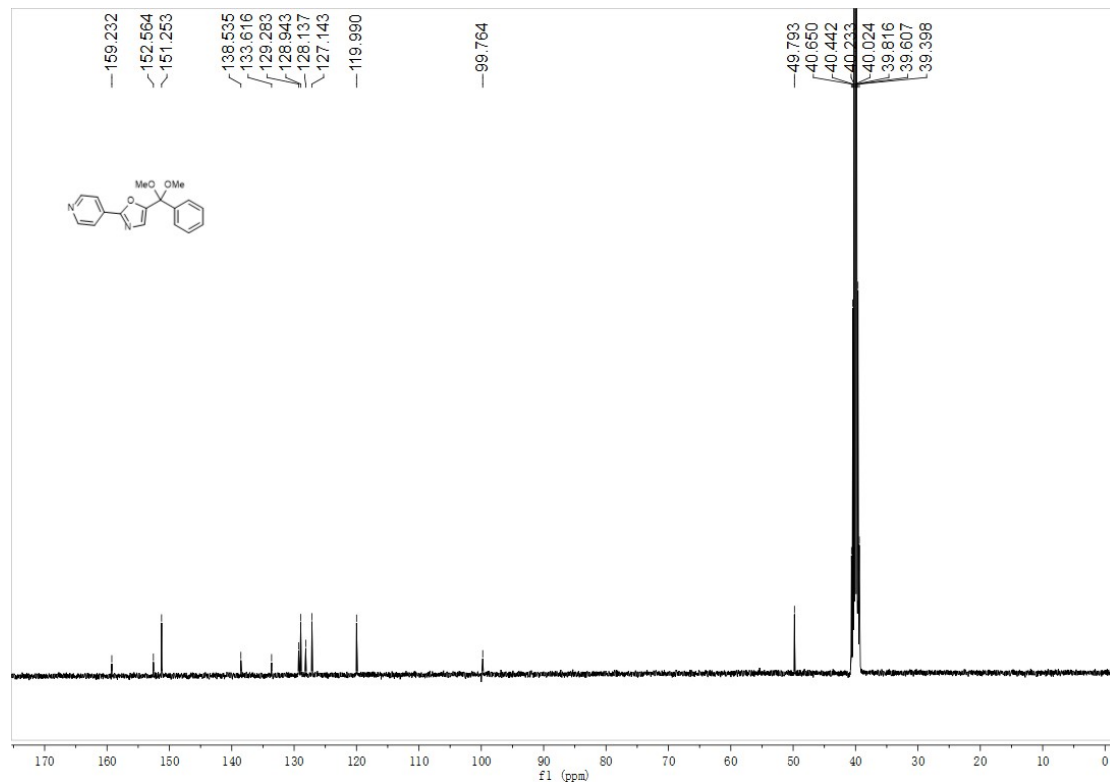


¹³C NMR (100 MHz, CDCl₃)

5-(dimethoxy(phenyl)methyl)-2-(pyridin-4-yl)oxazole (2aa):

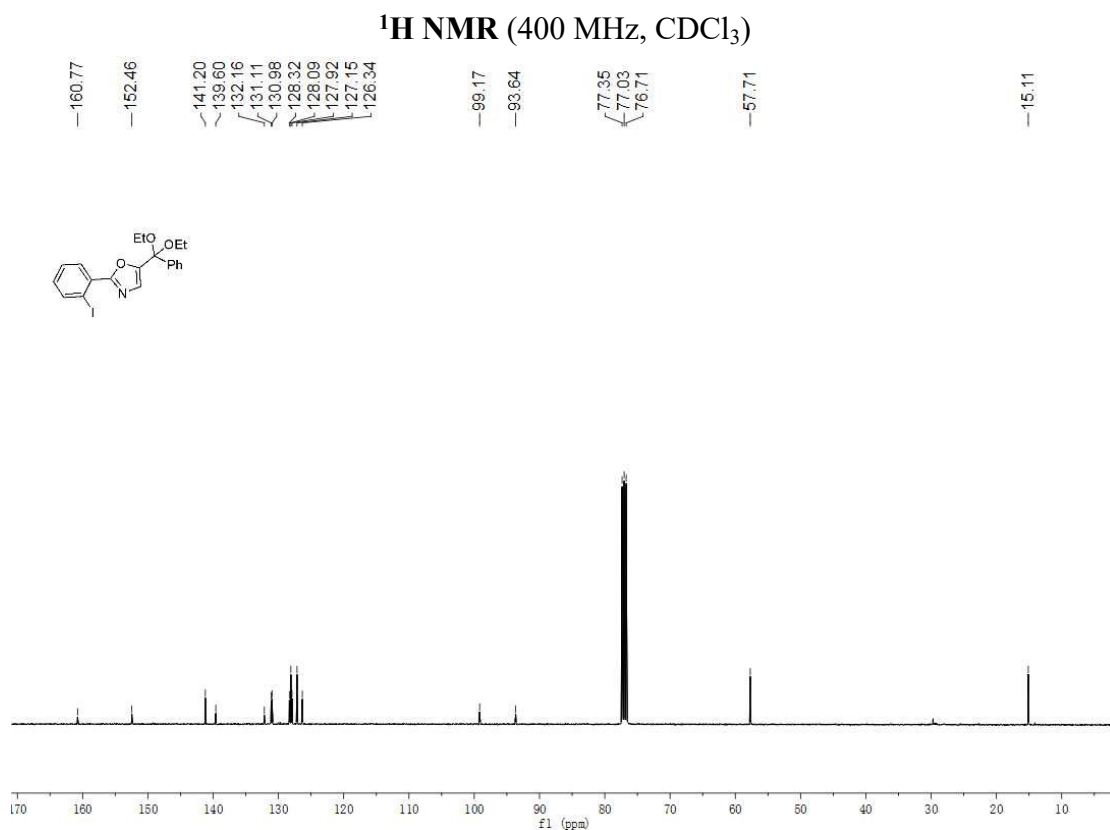
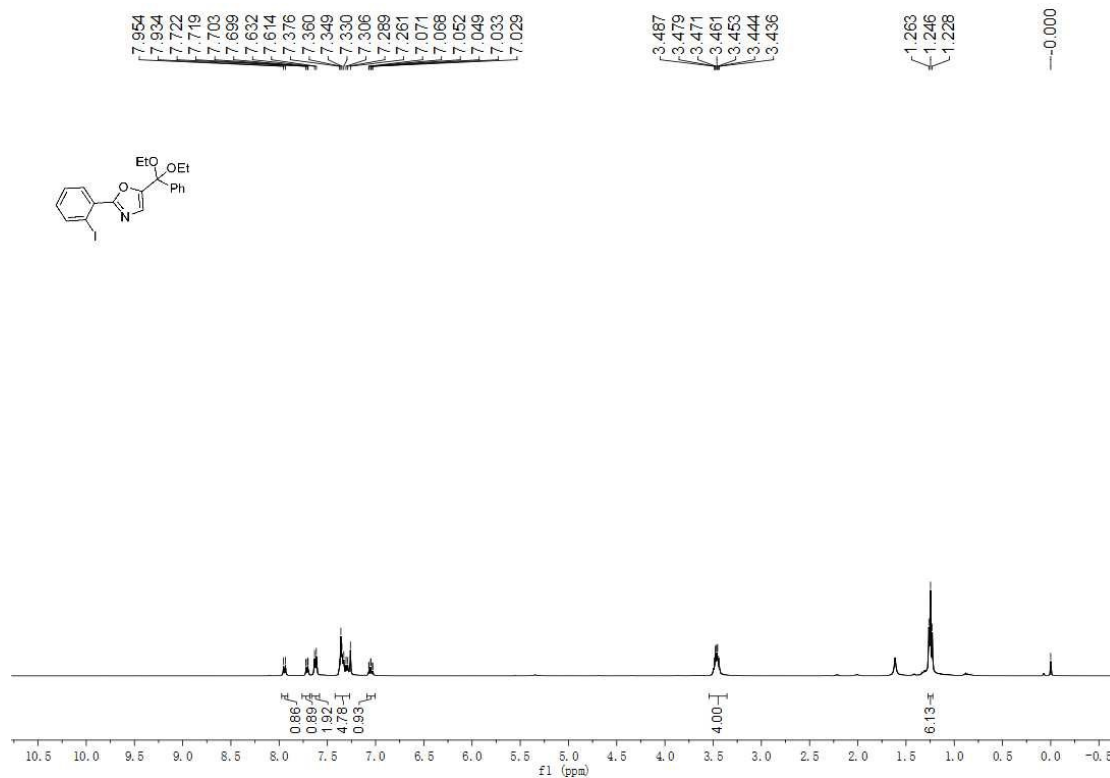


¹H NMR (400 MHz, DMSO-*d*₆)

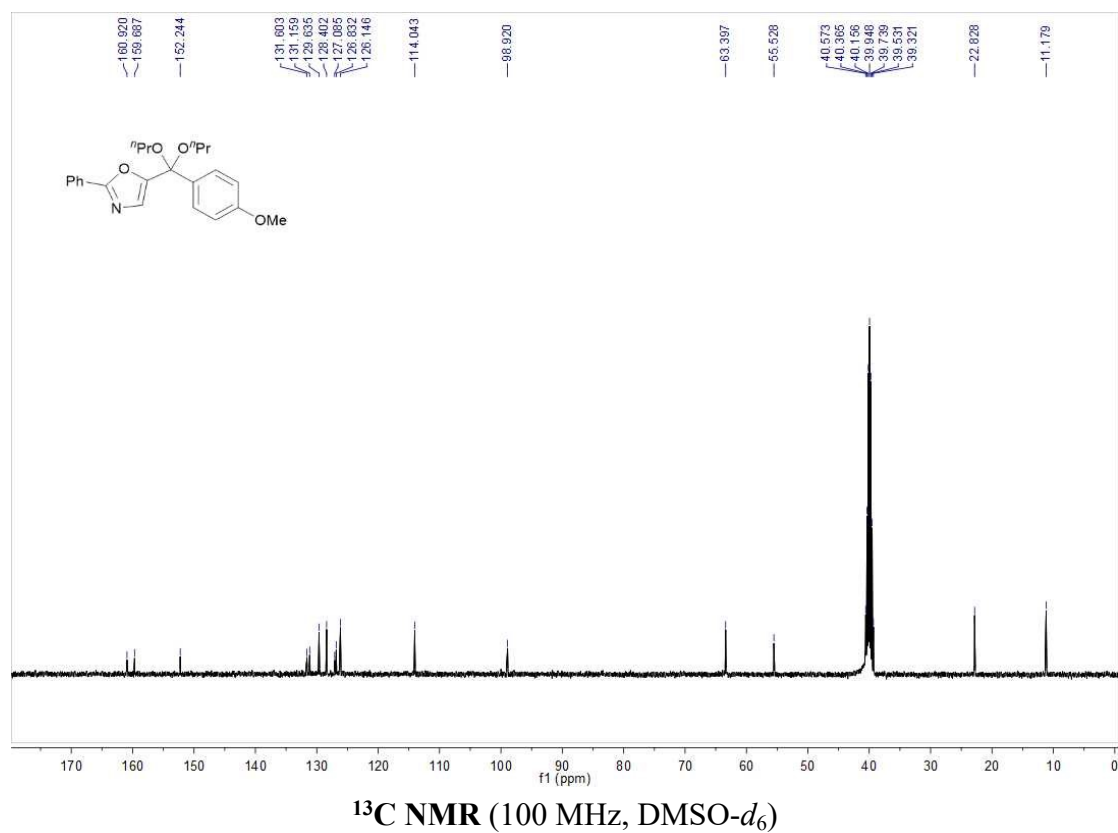
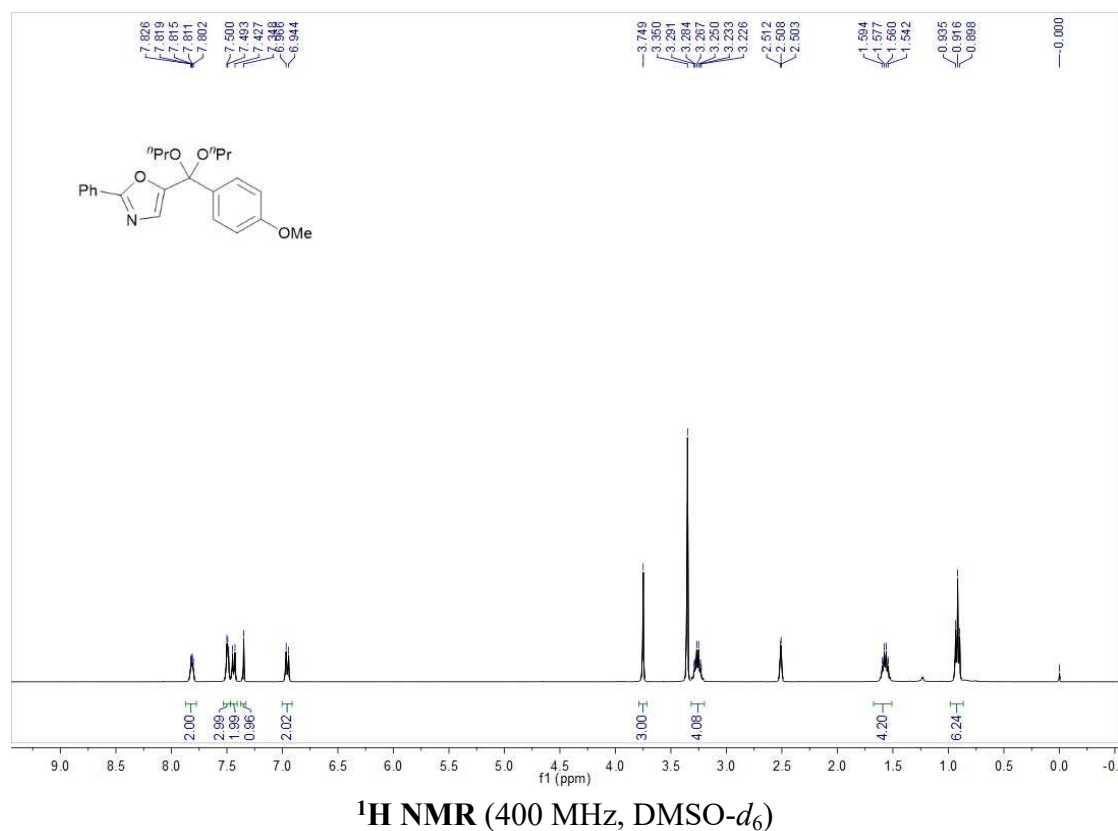


¹³C NMR (100 MHz, DMSO-*d*₆)

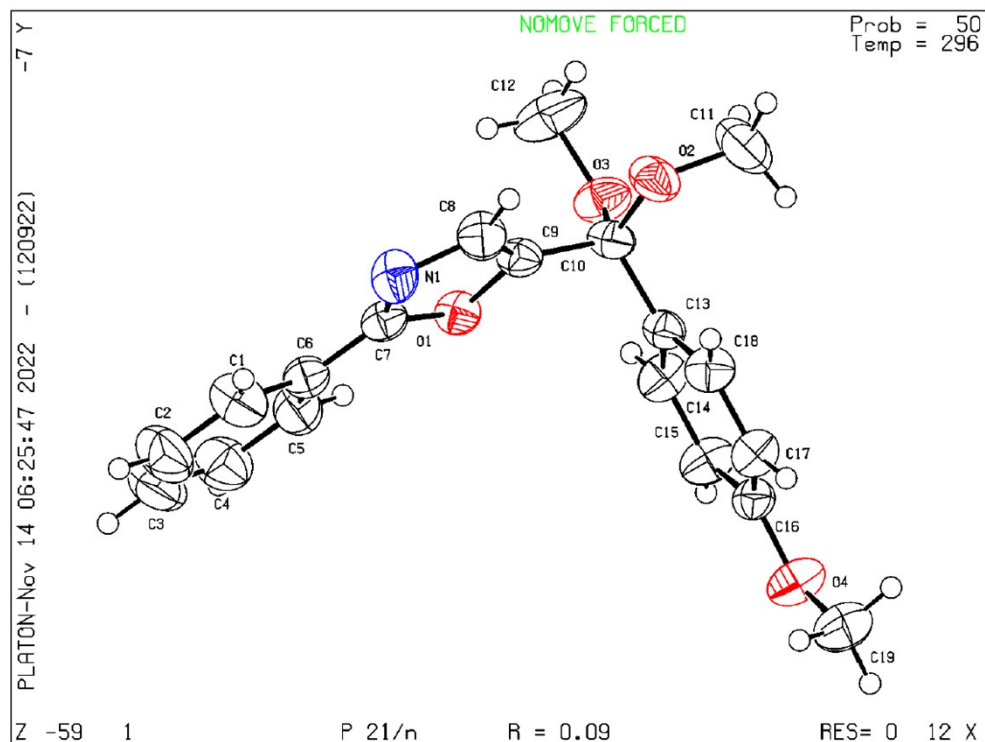
5-(Diethoxy(phenyl)methyl)-2-(2-iodophenyl)oxazole (2ab):



2-phenyl-5-(phenylpropoxymethyl)oxazole (2ac):



(D) The crystal structure of compound 2m (CCDC: 2258399).



Datablock: 1

Bond precision: C-C = 0.0064 Å Wavelength=0.71073

Cell: a=10.662(10) b=15.838(14) c=11.151(10)
alpha=90 beta=113.116(16) gamma=90

Temperature: 296 K

	Calculated	Reported
Volume	1732(3)	1732(3)
Space group	P 21/n	P 21/n
Hall group	-P 2yn	-P 2yn
Moiety formula	C19 H19 N O4	?
Sum formula	C19 H19 N O4	C19 H19 N O4
Mr	325.35	325.35
Dx, g cm ⁻³	1.248	1.248
Z	4	4
Mu (mm ⁻¹)	0.088	0.088
F000	688.0	688.0
F000'	688.35	
h, k, lmax	12, 18, 13	12, 18, 13
Nref	3053	3034
Tmin, Tmax	0.979, 0.986	
Tmin'	0.977	

Correction method= Not given

Data completeness= 0.994 Theta(max)= 24.998

R(reflections)= 0.0857(1571)

wR2(reflections)=
0.1428(3034)

S = 0.951

Npar= 220