Supporting Information

For

Visible-light-induced photocatalytic oxytrifluoromethylation of N-allylamides for the synthesis of CF₃-containing oxazolines and benzoxazines

Qiao-Hui Deng, a Jia-Rong Chen, ** Qiang Wei, a Quan-Qing Zhao, a Liang-Qiu Lu a and Wen-Jing Xiao a,b

[a] Key Laboratory of Pesticide & Chemical Biology, Ministry of Education, College of Chemistry, Central China Normal University, 152 Luoyu Road, Wuhan, Hubei 430079, China
[b] State Key Laboratory of Applied Organic Chemistry Lanzhou University, Lanzhou 730000, China

E-mail: chenjiarong@mail.ccnu.edu.cn; wxiao@mail.ccnu.edu.cn

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Table of Contents

1. General Information
2. Materials
3. Detailed Optimization of Reaction Conditions
4. Time Profile of Photocatalytic Oxytrifluoromethylation of 1a with 2a
5. Crystal Structure of 5f
6. Preparation and Date of Substrates
7. General Procedures and Data of Products
8. Copies of $^1$H NMR, $^{13}$C NMR Spectra and $^{19}$F NMR
1. General Information

$^1$H NMR, $^{13}$C NMR and $^{19}$F NMR spectra were recorded on 400/600 MHz spectrophotometers. Chemical shifts ($\delta$) are reported in parts per million (ppm) relative to residual solvent signals (CDCl$_3$, 7.26 ppm for $^1$H NMR, CDCl$_3$, 77.0 ppm for $^{13}$C NMR). Data are reported as follows: chemical shift ($\delta$), multiplicity (s = singlet, d = doublet, t = triplet, q = quartet, dd = doublet of doublets, dt = doublet of triplets, m = multiplet, br = broad signal), coupling constants (Hz). Mass spectra were measured on MS spectrometer (EI) or LC/MS/MS (ESI-MS). HRMS was recorded on Bruker ultraflexXtreme MALDI-TOF/TOF mass spectrometer.

2. Materials

Unless otherwise noted, materials were purchased from commercial suppliers and used without further purification. All the solvents were treated according to general methods.$^1$ Flash column chromatography was performed using 200-300 mesh silica gel. The $N$-allylamides were prepared according to literature procedures from commercially available substrates.$^{2,3}$

References
3. Detailed Optimization of Reaction Conditions

Table S1. Studies of the effect of photocatalysts\textsuperscript{a}

<table>
<thead>
<tr>
<th>entry</th>
<th>Catalyst</th>
<th>(t) (h)</th>
<th>yield (%)\textsuperscript{b}</th>
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<tr>
<td>1</td>
<td>Ru(bpy)\textsubscript{3}Cl\textsubscript{2}·6H\textsubscript{2}O</td>
<td>5</td>
<td>86</td>
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<tr>
<td>2</td>
<td>Ir(ppy)\textsubscript{2}(dtbbpy)PF\textsubscript{6}</td>
<td>5</td>
<td>88</td>
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<tr>
<td>3</td>
<td>Ir(dF(CF\textsubscript{3})ppy)\textsubscript{2}(dtbbpy)PF\textsubscript{6}</td>
<td>5</td>
<td>60</td>
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<tr>
<td>4</td>
<td>fac-Ir(ppy)\textsubscript{3}</td>
<td>5</td>
<td>85</td>
</tr>
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<td>5</td>
<td>EosinY</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Ir(ppy)\textsubscript{3}(bpy)PF\textsubscript{6}</td>
<td>5</td>
<td>91</td>
</tr>
<tr>
<td>7</td>
<td>Ru(bpm)\textsubscript{3}(BArF)\textsubscript{2}</td>
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<tr>
<td>8</td>
<td>2,4,6-triphenylpyrylium tetrafluoroborate</td>
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</tr>
<tr>
<td>9</td>
<td>Ru(bpy)\textsubscript{3}(PF\textsubscript{6})\textsubscript{2}</td>
<td>5</td>
<td>93</td>
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</tbody>
</table>

\textsuperscript{a}Reaction conditions: \(1\text{a}\) (0.1 mmol), \(2\text{a}\) (0.11 mmol), catalyst (5 mol\%), \(\text{Na}_2\text{HPO}_4\) (0.2 mmol) in \(\text{CH}_3\text{CN}\) (1.0 mL) under Ar with 3 W blue LEDs irradiation at room temperature. \textsuperscript{b}GC yield using biphenyl as an internal standard.
Table S2. Studies of the effect of solvents

<table>
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<td>59</td>
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<td>CH$_2$Cl$_2$</td>
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<td>5</td>
<td>CHCl$_3$</td>
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<td>10</td>
<td>Et$_2$O</td>
<td>24</td>
<td>0</td>
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</table>

$^a$Reaction conditions: 1a (0.1 mmol), 2a (0.11 mmol), Ru(bpy)$_3$(PF$_6$)$_2$ (5 mol%), Na$_3$HPO$_4$ (0.2 mmol) in the solvent (1.0 mL) under Ar with 3 W blue LEDs irradiation at room temperature. $^b$ GC yield using biphenyl as an internal standard.
Table S3. Studies of the effect of bases

<table>
<thead>
<tr>
<th>entry</th>
<th>base</th>
<th>$t$ (h)</th>
<th>yield (%)$^b$</th>
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<tbody>
<tr>
<td>1</td>
<td>Na$_2$HPO$_4$</td>
<td>5</td>
<td>93</td>
</tr>
<tr>
<td>2</td>
<td>NaHCO$_3$</td>
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<td>95</td>
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<tr>
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<td>K$_2$CO$_3$</td>
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<td>Cs$_2$CO$_3$</td>
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<tr>
<td>7</td>
<td>K$_2$HPO$_4$</td>
<td>5</td>
<td>91</td>
</tr>
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</table>

$^a$Reaction conditions: 1a (0.1 mmol), 2a (0.11 mmol), Ru(bpy)$_3$(PF$_6$)$_2$ (5 mol%), Base (0.2 mmol) in the CH$_3$CN (1.0 mL) under Ar with 3 W blue LEDs irradiation at room temperature. $^b$ GC yield using biphenyl as an internal standard.
4. Time profile of photocatalytic oxytrifluoromethylation of 1a with 2a

The oxytrifluoromethylation of 1a was performed with/without visible light irradiation. The time profile is shown in Figure S1. As a result, continuous irradiation of visible light is essential for efficient reaction. Furthermore, the result of this experiment suggests that radical chain propagation mechanism isn’t main component in this reaction.

![Figure S1.](image-url)
5. Crystal Structure of 5f

Figure S2.

6. Spectral Data of Substrates

2,4,6-Trimethyl-N-(2-phenylallyl)benzamide (1f): $^1$H NMR (600 MHz, CDCl$_3$) $\delta$ (ppm) 7.48 (d, $J = 7.2$ Hz, 2H), 7.35 (t, $J = 7.4$ Hz, 2H), 7.30 (s, 1H), 6.77 (s, 2H), 5.63 (br s, 1H), 5.48 (s, 1H), 5.34 (s, 1H), 4.56 (d, $J = 5.6$ Hz, 2H), 2.23 (s, 3H), 2.13 (s, 6H); $^{13}$C NMR (100 MHz, CDCl$_3$) $\delta$ (ppm) 170.2, 144.4, 138.2, 138.2, 134.6, 134.1, 128.4, 128.0, 126.2, 114.6, 43.3, 20.9, 18.9; HRMS (ESI): calculated for [C$_{19}$H$_{21}$NO+Na]$^+$ requires 302.1515, found 302.1518.

N-(2-phenylallyl)furan-2-carboxamide (1g): $^1$H NMR (600 MHz, CDCl$_3$) $\delta$ (ppm) 7.48 (d, $J = 7.5$ Hz, 2H), 7.39 (s, 1H), 7.36 (t, $J = 7.4$ Hz, 2H), 7.30 (t, $J = 7.3$ Hz, 1H), 7.12 (d, $J = 3.0$ Hz, 1H), 6.48 (s, 1H), 6.45 (br s, 1H), 5.52 (s, 1H), 5.31 (s, 1H), 4.50 (d, $J = 5.8$ Hz, 2H); $^{13}$C NMR (100 MHz, CDCl$_3$) $\delta$ (ppm) 158.1, 147.6, 143.9, 143.8, 138.2, 128.4, 128.0, 125.9, 114.2, 113.8, 112.0, 42.6; HRMS (ESI): calculated for [C$_{14}$H$_{13}$NO$_2$+Na]$^+$ requires 250.0838, found 250.0837.

N-(2-(4-methoxyphenyl)allyl)benzamide (1j): $^1$H NMR (600 MHz, CDCl$_3$) $\delta$ (ppm) 7.71 (d, $J = 7.6$ Hz, 2H), 7.48 (t, $J = 7.3$ Hz, 1H), 7.45 – 7.37 (m, 4H), 6.89 (d, $J = 8.5$ Hz, 2H), 6.29 (br s, 1H), 5.45 (s, 1H), 5.25 (s, 1H), 4.52 (d, $J = 5.5$ Hz, 2H), 3.81 (s, 3H); $^{13}$C NMR (100 MHz, CDCl$_3$) $\delta$ (ppm) 167.3, 159.4, 143.4, 134.3, 131.3, 130.6, 128.4, 127.1, 126.8, 113.8, 112.2, 55.1,
43.7; HRMS (ESI): calculated for \([\text{C}_{17}\text{H}_{17}\text{NO}_{2}+\text{Na}]^{+}\) requires 290.1151, found 290.1143.

\[ \text{N-(2-(3-methoxyphenyl)allyl)benzamide (1k)} \]: \(^1\text{H NMR} (600 \text{ MHz, CDCl}_3) \delta (\text{ppm}) \]
7.74 – 7.68 (m, 2H), 7.48 (t, \(J=7.4 \text{ Hz}, 1\text{H})\), 7.40 (t, \(J=7.6 \text{ Hz}, 2\text{H})\), 7.30 – 7.26 (m, 1H),
7.07 (d, \(J=7.7 \text{ Hz}, 1\text{H})\), 7.02 (s, 1H), 6.87 – 6.83 (m, 1H), 6.23 (br s, 1H), 5.52 (s, 1H),
5.32 (s, 1H), 4.53 (d, \(J=5.5 \text{ Hz}, 2\text{H})\), 3.81 (s, 3H); \(^{13}\text{C NMR} (100 \text{ MHz, CDCl}_3) \delta (\text{ppm}) 167.3, 159.6, 144.0,
139.8, 134.3, 131.4, 129.4, 128.4, 126.8, 118.4, 113.8, 113.5, 111.7, 55.1, 43.5; HRMS (ESI): calculated for
\([\text{C}_{17}\text{H}_{17}\text{NO}_{2}+\text{Na}]^{+}\) requires 290.1151, found 290.1157.

\[ \text{N-(2-(naphthalen-2-yl)allyl)benzamide (1n)} \]: \(^1\text{H NMR} (600 \text{ MHz, CDCl}_3) \delta (\text{ppm}) 7.92 
(\text{s, 1H}), 7.86 – 7.80 (m, 3H), 7.71 (d, \(J=8.2 \text{ Hz}, 2\text{H})\), 7.64 (d, \(J=8.5 \text{ Hz}, 1\text{H})\), 7.49 – 7.43 
(m, 3H), 7.38 (t, \(J=7.5 \text{ Hz}, 2\text{H})\), 6.26 (br s, 1H), 5.67 (s, 1H), 5.43 (s, 1H), 4.66 (d, \(J=5.4 \text{ Hz}, 2\text{H})\);
\(^{13}\text{C NMR} (100 \text{ MHz, CDCl}_3) \delta (\text{ppm}) 167.4, 143.8, 135.5, 134.2, 133.2, 132.9, 131.3, 128.4, 128.2,
128.0, 127.4, 126.9, 126.2, 126.1, 124.8, 124.1, 114.2, 43.6; HRMS (ESI): calculated for \([\text{C}_{20}\text{H}_{17}\text{NO}+\text{Na}]^{+}\) requires 310.1202, found 310.1203.

\[ \text{N-(3-phenylbut-3-en-1-yl)benzamide (1q)} \]: \(^1\text{H NMR} (600 \text{ MHz, CDCl}_3) \delta (\text{ppm}) 8.47 (d, \(J=8.8 \text{ Hz}, 1\text{H})\), 7.73 (br s, 1H), 7.44 (t, \(J=7.4 \text{ Hz}, 2\text{H})\), 7.40 (t, \(J=7.6 \text{ Hz}, 2\text{H})\), 7.36 (t, \(J=7.6 \text{ Hz}, 2\text{H})\),
7.31 (d, \(J=7.2 \text{ Hz}, 1\text{H})\), 6.16 (br s, 1H), 5.43 (s, 1H), 5.19 (s, 1H), 3.59 (q, \(J=6.3 \text{ Hz}, 2\text{H})\), 2.86 (t, \(J=6.6 \text{ Hz}, 2\text{H})\); \(^{13}\text{C NMR} (150 \text{ MHz, CDCl}_3) \delta (\text{ppm}) 167.5, 145.4, 140.0, 134.4, 131.3, 128.5, 128.4, 127.7, 126.7, 126.0, 114.3, 38.7, 34.8; HRMS (ESI): calculated for \([\text{C}_{17}\text{H}_{17}\text{NO}+\text{Na}]^{+}\) requires 274.1202, found 274.1220.

\[ \text{N-(4-chloro-2-(1-phenylvinyl)phenyl)benzamide (4c)} \]: \(^1\text{H NMR} (600 \text{ MHz, CDCl}_3) \delta (\text{ppm}) 8.47 (d, \(J=8.8 \text{ Hz}, 1\text{H})\), 7.73 (br s, 1H), 7.44 (t, \(J=7.4 \text{ Hz}, 1\text{H})\), 7.42 – 7.37 (m, 6H), 7.34 (d, \(J=2.4 \text{ Hz}, 1\text{H})\),
7.30 (t, \(J=7.8 \text{ Hz}, 2\text{H})\), 7.23 (d, \(J=8.0 \text{ Hz}, 2\text{H})\), 5.93 (s, 1H), 5.45 (s, 1H); \(^{13}\text{C NMR} (100 \text{ MHz, CDCl}_3) \delta (\text{ppm}) 164.9, 145.2, 138.2, 134.4, 134.1, 133.1, 131.7, 130.2, 129.2, 129.0,
128.8, 128.5, 126.7, 126.6, 122.2, 118.5, 109.7; HRMS (ESI): calculated for \([\text{C}_{21}\text{H}_{16}\text{ClNO}+\text{Na}]^{+}\) requires 356.0813, found 356.0805.

### 7. General Procedures and Data of Products

**Conditions A:** To a 10 mL schlenk tube equipped with a magnetic stir bar were added substrate 1 or 4 (0.30 mmol, 1.0 equiv), Umemoto’s reagent 2 (0.33 mmol, 1.1 equiv), Ru(bpy)\(_3\)(PF\(_6\))\(_2\) (0.0015 mmol, 0.005 equiv), NaHCO\(_3\) (0.60 mmol, 2.0 equiv) and dry CH\(_3\)CN (3.0 mL) under Ar. The resulting mixture was degassed via ‘freeze-pump-thaw’ procedure (3 times). Then the reaction mixture was stirred under irradiation with the 3 W blue LEDs. The reaction was monitored via TLC (petroleum ether : ethyl acetate) . Upon consumption of the starting materials, the solvent was evaporated under reduced pressure, the residue was purified by flash chromatography on silica gel (petroleum ether : ethyl acetate = 4:1) to give the desired product 3.
or 5.

**Conditions B:** To a 10 mL schlenk tube equipped with a magnetic stir bar were added substrate 1 or 4 (0.30 mmol, 1.0 equiv), BrCH(CO₂Et)₂ 2b (0.6 mmol 2.0 equiv), Ru(bpy)₃Cl₂·6H₂O (0.003 mmol, 0.01 equiv), 4-methoxy-N,N-diphenylaniline (0.60 mmol, 2.0 equiv), 4 Å MS (100 mg), Na₂HPO₄ (0.60 mmol, 2.0 equiv) and dry CH₃CN (3.0 mL) under Ar. The resulting mixture was degassed via ‘freeze-pump-thaw’ procedure (3 times). Then the reaction mixture was stirred under irradiation with the 3 W blue LEDs. The reaction was monitored via TLC (petroleum ether : ethyl acetate). Upon consumption of the starting materials, the solvent was evaporated under reduced pressure, the residue was purified by flash chromatography on silica gel (petroleum ether : ethyl acetate = 5:1) to give the desired product 3 or 5.

![Image](image_url)

2,5-Diphenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3a): Colorless oil, 88% yield. 1H NMR (600 MHz, CDCl₃) δ (ppm) 8.05 (d, J = 7.3 Hz, 2H), 7.53 (t, J = 7.4 Hz, 1H), 7.47 (t, J = 7.6 Hz, 2H), 7.42 – 7.37 (m, 4H), 7.34 – 7.29 (m, 1H), 4.39 (d, J = 14.8 Hz, 1H), 4.23 (d, J = 14.9 Hz, 1H), 2.95 – 2.85 (m, 2H); 13C NMR (100 MHz, CDCl₃) δ (ppm) 162.9, 142.5, 131.7, 128.7, 128.5, 128.2, 127.9, 127.3, 124.8 (q, J = 277.2 Hz) 124.3, 84.6, 68.2, 44.2 (q, J = 26.9 Hz); 19F NMR (376 MHz, CDCl₃) δ (ppm) -61.61 (s, 3F); IR (in KBr): 3438, 3065, 2938, 1655, 1450, 1377, 1349, 1262, 1133, 1084, 696 cm⁻¹; HRMS (ESI): calculated for [C₁₇H₁₄F₃NO+Na]+ requires 328.0920, found 328.0923.

![Image](image_url)

2-(4-Methoxyphenyl)-5-phenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3b): Colorless oil, 91% yield. 1H NMR (400 MHz, CDCl₃) δ (ppm) 7.99 (d, J = 8.6 Hz, 2H), 7.38 (m, 4H), 7.31 (m, 1H), 6.96 (d, J = 8.6 Hz, 2H), 4.35 (d, J = 14.7 Hz, 1H), 4.18 (d, J = 14.7 Hz, 1H), 3.85 (s, 3H), 2.92 – 2.85 (m, 2H); 13C NMR (100 MHz, CDCl₃) δ (ppm) 162.7, 162.3, 142.6, 130.0, 128.6, 127.8, 124.8 (q, J = 276.9 Hz), 124.3, 119.7, 113.8, 84.4, 68.2, 55.3, 44.1 (q, J = 27.3 Hz); 19F NMR (376 MHz, CDCl₃) δ (ppm) -61.59 (s, 3F); IR (in KBr): 3441, 2936, 1654, 1609, 1514, 1450, 1377, 1349, 1262, 1133, 1078, 1030, 913, 841, 744, 702 cm⁻¹; HRMS (ESI): calculated for [C₁₈H₁₆F₃NO₂+Na]+ requires 358.1025, found 358.1042.

![Image](image_url)

5-Phenyl-2-(p-tolyl)-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3c): White solid, 89% yield. M.P.: 39 - 41 °C; 1H NMR (600 MHz, CDCl₃) δ (ppm) 7.94 (d, J = 8.1 Hz, 2H), 7.41 – 7.36 (m, 4H), 7.32 – 7.29 (m, 1H), 7.28 – 7.24 (m, 2H), 4.36 (d, J = 14.7 Hz, 1H), 4.20 (d, J = 14.7 Hz, 1H), 2.89 – 2.86 (m, 2H), 2.41 (s, 3H); 13C NMR (100 MHz, CDCl₃) δ (ppm) 163.0, 142.1, 142.0, 129.2, 128.6, 128.2, 127.9, 124.8 (q, J = 277.4 Hz) 124.3, 124.8, 84.4, 68.2, 44.1 (q, J = 26.9 Hz); 19F NMR (376 MHz, CDCl₃) δ (ppm) -61.59 (s, 3F); IR (in KBr): 3425, 2927, 1654, 1377, 1349, 1262, 1133, 1079, 913, 745, 676 cm⁻¹; HRMS (ESI): calculated for [C₁₈H₁₆F₃NO+Na]+ requires 342.1076, found 342.1092.

![Image](image_url)

2-(4-Bromophenyl)-5-phenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3d): Colorless oil, 88% yield. 1H NMR (600 MHz, CDCl₃) δ (ppm) 7.94 (d, J = 8.1 Hz, 2H), 7.41 – 7.36 (m, 4H), 7.32 – 7.29 (m, 1H), 7.28 – 7.24 (m, 2H), 4.36 (d, J = 14.7 Hz, 1H), 4.20 (d, J = 14.7 Hz, 1H), 2.89 – 2.86 (m, 2H), 2.41 (s, 3H); 13C NMR (100 MHz, CDCl₃) δ (ppm) 163.0, 142.2, 142.1, 129.2, 128.6, 128.2, 127.9, 124.8 (q, J = 277.4 Hz) 124.3, 124.8, 84.4, 68.2, 44.1 (q, J = 27.1 Hz), 21.5; 19F NMR (376 MHz, CDCl₃) δ (ppm) -61.60 (s, 3F); IR (in KBr): 3425, 2927, 1654, 1377, 1349, 1262, 1133, 1079, 913, 745, 676 cm⁻¹; HRMS (ESI): calculated for [C₁₄H₉F₃NO+Na]+ requires 342.1076, found 342.1092.
oil, 95% yield. 

**1**H NMR (600 MHz, CDCl₃) δ (ppm) 7.91 (d, J = 8.5 Hz, 2H), 7.60 (d, J = 8.5 Hz, 2H), 7.40 – 7.38 (m, 4H), 7.34 – 7.32 (m, 1H), 4.38 (d, J = 14.9, 1H), 4.21 (d, J = 14.9 Hz, 1H), 2.95 – 2.84 (m, 2H); 

**1**3C NMR (100 MHz, CDCl₃) δ (ppm) 162.0, 142.3, 131.7, 129.7, 128.7, 128.0, 126.4, 126.2, 124.8 (q, J = 276.9 Hz), 124.2, 84.9, 68.1, 44.1 (q, J = 27.5 Hz); 

**1**9F NMR (376 MHz, CDCl₃) δ (ppm) -61.67 (s, 3F); 

IR (in KBr): 3424, 2928, 1656, 1593, 1398, 1377, 1348, 1377, 1348, 1262, 1134, 1079, 1011, 837, 727, 703 cm⁻¹; HRMS (ESI): calculated for [C₁₇H₁₃BrF₃NO+H]⁺ requires 384.0205, found 384.0204.

2-(4-Nitrophenyl)-5-phenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3e): White solid, 69% yield. M.P.: 93 - 95 °C; 

**1**H NMR (600 MHz, CDCl₃) δ (ppm) 8.32 (d, J = 8.4 Hz, 2H), 8.22 (d, J = 8.5 Hz, 2H), 7.44 – 7.38 (m, 4H), 7.35 (t, J = 6.8 Hz, 1H), 4.47 (d, J = 15.5 Hz, 1H), 4.30 (d, J = 15.4 Hz, 1H), 3.00 – 2.84 (m, 2H); 

**1**3C NMR (100 MHz, CDCl₃) δ (ppm) 161.0, 149.6, 142.1, 133.0, 129.2, 128.9, 128.2, 124.7 (q, J = 276.7 Hz), 124.1, 123.7, 85.5, 68.1, 44.2 (q, J = 27.2 Hz); 

**1**9F NMR (376 MHz, CDCl₃) δ (ppm) -61.72 (s, 3F); 

IR (in KBr): 3438, 2973, 1655, 1630, 1601, 1526, 1378, 1343, 1261, 1133, 1081, 1043, 911, 867, 742, 703 cm⁻¹; HRMS (ESI): calculated for [C₁₇H₁₃F₃N₂O₃+H]⁺ requires 351.0951, found 351.0963.

2-Mesityl-5-phenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3f): Colorless oil, 75% yield. 

**1**H NMR (600 MHz, CDCl₃) δ (ppm) 7.46 – 7.36 (m, 4H), 7.33 (s, 1H), 6.90 (s, 2H), 4.42 (d, J = 14.6 Hz, 1H), 4.35 (d, J = 14.7 Hz, 1H), 2.93 – 2.88 (m, 2H), 2.30 (s, 3H), 2.29 (s, 6H); 

**1**3C NMR (100 MHz, CDCl₃) δ (ppm) 163.3, 142.5, 139.5, 137.0, 128.6, 128.3, 127.9, 125.5, 124.7 (q, J = 276.7 Hz), 124.6, 84.2, 68.1, 45.0 (q, J = 27.1 Hz), 21.1, 19.7; 

**1**9F NMR (376 MHz, CDCl₃) δ (ppm) -61.37 (s, 3F); 

IR (in KBr): 3425, 2925, 1670, 1376, 1260, 1131, 1062, 1036, 744, 703 cm⁻¹; HRMS (ESI): calculated for [C₂₀H₂₀F₃NO+Na⁺ requires 370.1389, found 370.1371.

2-(Furan-2-yl)-5-phenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3g): Colorless oil, 45% yield. 

**1**H NMR (600 MHz, CDCl₃) δ (ppm) 7.60 (d, J = 0.9 Hz, 1H), 7.41 – 7.37 (m, 4H), 7.35 – 7.31 (m, 1H), 7.10 (d, J = 3.4 Hz, 1H), 6.54 (dd, J = 3.4 Hz, J = 1.8 Hz, 1H), 4.39 (d, J = 14.9 Hz, 1H), 4.23 (d, J = 14.9 Hz, 1H), 2.91 – 2.88 (m, 2H); 

**1**3C NMR (100 MHz, CDCl₃) δ (ppm) 155.2, 145.6, 142.5, 142.0, 128.7, 128.1, 124.7 (q, J = 276.8 Hz), 124.3, 114.9, 111.6, 85.0, 67.7, 44.0 (q, J = 27.0 Hz); 

**1**9F NMR (376 MHz, CDCl₃) δ (ppm) -61.73 (s, 3F); IR (in KBr): 3435, 2930, 1678, 1483, 1378, 1260, 1131, 1062, 1036, 744, 703 cm⁻¹; HRMS (ESI): calculated for [C₁₅H₁₂F₃NO₂+Na⁺ requires 318.0712, found 318.0699.

5-Phenyl-2-(pyridin-2-yl)-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3h): Colorless oil, 94% yield. 

**1**H NMR (600 MHz, CDCl₃) δ (ppm) 9.26 (s, 1H), 8.82 – 8.72 (m, 1H), 8.31 (d, J = 7.9 Hz, 1H), 7.44 – 7.39 (m, 5H), 7.36 – 7.33 (m, 1H), 4.44 (d, J = 15.0 Hz, 1H), 4.26 (d, J = 15.1 Hz, 1H), 2.96 – 2.86 (m, 2H); 

**1**3C NMR (100 MHz, CDCl₃) δ (ppm) 160.8, 152.2, 149.3, 142.2, 135.5, 128.7, 128.1, 124.8 (q, J = 280.4 Hz), 124.1, 123.4, 123.3, 85.0, 67.8, 44.1 (q, J = 27.0 Hz); 

**1**9F NMR (376 MHz, CDCl₃) δ (ppm) -61.70 (s, 3F); IR (in KBr): 3441, 2925, 1659, 1592, 1379, 1352, 1261, 1129, 1083, 1021, 705 cm⁻¹; HRMS (ESI): calculated for [C₁₅H₁₂F₆NO₂+Na⁺ requires 318.0712, found 318.0699.
(ESI): calculated for \([\text{C}_{16}\text{H}_{13}\text{F}_{3}\text{N}_{2}\text{O}+\text{H}]^+\) requires 307.1047, found 307.1037.

2-Phenyl-5-(p-tolyl)-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3i): Colorless oil, 94% yield. \(^1\)H NMR (600 MHz, CDCl\(_3\)) \(\delta\) (ppm) 8.08 (d, \(J = 7.3\) Hz, 2H), 7.52 (t, \(J = 7.4\) Hz, 1H), 7.47 (t, \(J = 7.7\) Hz, 2H), 7.31 (d, \(J = 7.9\) Hz, 2H), 7.20 (d, \(J = 7.9\) Hz, 2H), 4.38 (d, \(J = 14.8\) Hz, 1H), 4.22 (d, \(J = 14.8\) Hz, 1H), 2.95 – 2.83 (m, 2H), 2.35 (s, 3H); 13C NMR (100 MHz, CDCl\(_3\)) \(\delta\) (ppm) 162.8, 139.6, 137.6, 131.6, 129.3, 128.4, 128.2, 127.4, 124.9 (q, \(J = 276.8\) Hz), 124.2, 84.6, 68.1, 44.1 (q, \(J = 27.2\) Hz), 20.9; 19F NMR (376 MHz, CDCl\(_3\)) \(\delta\) (ppm) -61.57 (s, 3F); IR (in KBr): 3402, 2975, 2928, 1655, 1451, 1377, 1350, 1263, 1134, 1086, 1027, 911, 741, 696 cm\(^{-1}\); HRMS (ESI): calculated for \([\text{C}_{18}\text{H}_{16}\text{F}_{3}\text{NO}+\text{Na}]^+\) requires 342.1076, found 342.1087.

5-(4-Methoxyphenyl)-2-phenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3j): Colorless oil, 81% yield. \(^1\)H NMR (600 MHz, CDCl\(_3\)) \(\delta\) (ppm) 8.04 (d, \(J = 7.4\) Hz, 2H), 7.53 (t, \(J = 7.4\) Hz, 1H), 7.46 (t, \(J = 7.6\) Hz, 2H), 7.33 (d, \(J = 8.7\) Hz, 2H), 6.91 (d, \(J = 8.8\) Hz, 2H), 4.36 (d, \(J = 14.7\) Hz, 1H), 4.21 (d, \(J = 14.8\) Hz, 1H), 3.81 (s, 3H), 2.91 – 2.85 (m, 2H); 13C NMR (100 MHz, CDCl\(_3\)) \(\delta\) (ppm) 162.8, 159.2, 134.5, 131.6, 128.4, 128.2, 127.4, 125.6, 124.9 (q, \(J = 276.9\) Hz), 114.0, 84.5, 68.0, 55.2, 44.2 (q, \(J = 27.0\) Hz); 19F NMR (376 MHz, CDCl\(_3\)) \(\delta\) (ppm) -61.79 (s, 3F); IR (in KBr): 3431, 2968, 1655, 1614, 1515, 1377, 1349, 1259, 1179, 1134, 1084, 1030, 912, 744, 696 cm\(^{-1}\); HRMS (ESI): calculated for \([\text{C}_{18}\text{H}_{16}\text{F}_{3}\text{NO}_2+\text{Na}]^+\) requires 358.1025, found 358.0969.

5-(3-Methoxyphenyl)-2-phenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3k): Colorless oil, 92% yield. \(^1\)H NMR (600 MHz, CDCl\(_3\)) \(\delta\) (ppm) 8.04 (d, \(J = 7.8\) Hz, 2H), 7.53 (t, \(J = 7.3\) Hz, 1H), 7.46 (t, \(J = 7.6\) Hz, 2H), 7.32 (t, \(J = 7.9\) Hz, 1H), 7.06 – 6.90 (m, 2H), 6.85 (d, \(J = 8.3\) Hz, 1H), 4.37 (d, \(J = 14.9\) Hz, 1H), 4.21 (d, \(J = 14.9\) Hz, 1H), 3.82 (s, 3H), 2.94 – 2.86 (m, 2H); 13C NMR (100 MHz, CDCl\(_3\)) \(\delta\) (ppm) 162.8, 159.8, 144.2, 131.6, 129.8, 128.4, 128.2, 127.3, 124.8 (q, \(J = 276.9\) Hz), 116.6, 112.6, 110.8, 84.5, 68.2, 55.2, 44.1 (q, \(J = 27.0\) Hz); 19F NMR (376 MHz, CDCl\(_3\)) \(\delta\) (ppm) -61.65 (s, 3F); IR (in KBr): 3440, 2942, 1656, 1607, 1585, 1491, 1377, 1349, 1259, 1179, 1134, 1084, 1030, 912, 744, 696 cm\(^{-1}\); HRMS (ESI): calculated for \([\text{C}_{18}\text{H}_{16}\text{F}_3\text{NO}_2+\text{Na}]^+\) requires 358.1025, found 358.0969.

5-(4-Chlorophenyl)-2-phenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3l): Colorless oil, 94% yield. \(^1\)H NMR (600 MHz, CDCl\(_3\)) \(\delta\) (ppm) 8.03 (d, \(J = 7.9\) Hz, 2H), 7.54 (t, \(J = 7.7\) Hz, 1H), 7.47 (t, \(J = 7.7\) Hz, 2H), 7.38 – 7.34 (m, 4H), 4.37 (d, \(J = 14.8\) Hz, 1H), 4.18 (d, \(J = 14.8\) Hz, 1H), 2.91 – 2.86 (m, 2H); 13C NMR (100 MHz, CDCl\(_3\)) \(\delta\) (ppm) 162.7, 140.9, 133.8, 131.8, 128.9, 128.5, 128.2, 127.0, 125.8, 124.7 (q, \(J = 275.1\) Hz), 84.2, 68.3, 44.1 (q, \(J = 27.2\) Hz); 19F NMR (376 MHz, CDCl\(_3\)) \(\delta\) (ppm) -61.55 (s, 3F); IR (in KBr): 3446, 2942, 1656, 1494, 1377, 1349, 1264, 1231, 1129, 1085, 1058, 1026, 911, 745, 695 cm\(^{-1}\); HRMS (ESI): calculated for \([\text{C}_{17}\text{H}_{13}\text{ClF}_{3}\text{NO}+\text{H}]^+\) requires 340.0705, found 340.0708.

5-(Furan-2-yl)-2-phenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3m): Colorless oil,
48% yield. 1H NMR (400 MHz, CDCl3) δ (ppm) 7.96 (d, J = 7.2 Hz, 2H), 7.56 – 7.35 (m, 4H), 6.43 (d, J = 3.3 Hz, 1H), 6.37 (m, 1H), 4.43 (d, J = 15.3 Hz, 1H), 4.28 (d, J = 15.3 Hz, 1H), 3.11 – 2.99 (m, 2H); 13C NMR (100 MHz, CDCl3) δ (ppm) 162.6, 152.2, 143.4, 131.7, 128.4, 128.2, 127.0, 124.7 (q, J = 276.0 Hz), 110.5, 107.4, 80.3, 64.0, 41.0 (q, J = 27.8 Hz); 19F NMR (376 MHz, CDCl3) δ (ppm) -62.48 (s, 3F); IR (in KBr): 3434, 2948, 1655, 1408, 1371, 1348, 1260, 1132, 1092, 1026, 743, 696 cm⁻¹; HRMS (ESI): calculated for [C15H12F3NO2+H]+ requires 296.0893, found 296.0899.

5-(Naphthalen-2-yl)-2-phenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3n): Colorless oil, 71% yield. 1H NMR (600 MHz, CDCl3) δ (ppm) 8.11 (d, J = 7.1 Hz, 2H), 7.92 – 7.84 (m, 2H), 7.84 – 7.79 (m, 2H), 7.52 (t, J = 7.4 Hz, 1H), 7.50 – 7.44 (m, 4H), 7.42 (d, J = 8.6 Hz, 1H), 4.43 (d, J = 14.9 Hz, 1H), 4.29 (d, J = 14.8 Hz, 1H), 3.02 – 2.90 (m, 2H); 13C NMR (100 MHz, CDCl3) δ (ppm) 162.9, 139.6, 133.0, 132.70, 131.70, 128.8, 128.50, 128.3, 128.2, 127.6, 127.3, 126.6, 126.4, 124.9 (q, J = 276.8 Hz), 123.1, 122.3, 84.8, 68.2, 44.1 (q, J = 27.4 Hz); 19F NMR (376 MHz, CDCl3) δ (ppm) -61.55 (s, 3F); IR (in KBr): 3444, 3061, 2932, 1655, 1377, 1264, 1138, 1084, 910, 747, 695, 477 cm⁻¹; HRMS (ESI): calculated for [C21H16F3NO+Na]+ requires 378.1076, found 378.1116.

5-Methyl-2-phenyl-5-(2,2,2-trifluoroethyl)-4,5-dihydrooxazole (3o): Colorless oil, 35% yield. 1H NMR (600 MHz, CDCl3) δ (ppm) 7.93 (d, J = 7.2 Hz, 2H), 7.49 (t, J = 7.2 Hz, 1H), 7.42 (t, J = 7.5 Hz, 2H), 4.01 (d, J = 14.8 Hz, 1H), 3.85 (d, J = 14.9 Hz, 1H), 2.69 – 2.53 (m, 2H), 1.60 (s, 3H); 13C NMR (100 MHz, CDCl3) δ (ppm) 162.8, 131.5, 128.3, 128.1, 127.5, 125.2 (q, J = 276.0 Hz), 81.8, 66.3, 43.1 (q, J = 27.4 Hz), 25.3; 19F NMR (376 MHz, CDCl3) δ (ppm) -62.20 (s, 3F); IR (in KBr): 3430, 2976, 2877, 1651, 1452, 1378, 1350, 1270, 1220, 1167, 1108, 1085, 1062, 1026, 911, 779, 741, 695 cm⁻¹; HRMS (ESI): calculated for [C12H12F3NO+Na]+ requires 266.0763, found 266.0784.

2,5-Diphenyl-5-(1,1,1-trifluoropropan-2-yl)-4,5-dihydrooxazole (3p): Colorless oil, 70% yield, dr = 1.1:1. 1H NMR (400 MHz, CDCl3) δ (ppm) major + minor: 1H NMR (400 MHz, CDCl3) δ (ppm) 8.03 (m, 4H), 7.50 (m, 2H), 7.47 – 7.41 (m, 6H), 7.40 – 7.34 (m, 6H), 7.31 – 7.29 (m, 2H), 4.60 (d, J = 15.2 Hz, 1H), 4.49 (d, J = 15.2 Hz, 1H), 4.35 (d, J = 15.1 Hz, 1H), 4.28 (d, J = 15.1 Hz, 1H), 3.00 – 2.80 (m, 2H), 1.28 (d, J = 7.0 Hz, 3H), 1.20 (d, J = 7.1 Hz, 3H); 13C NMR (100 MHz, CDCl3) δ (ppm) 162.9, 162.6, 142.5, 141.9, 131.6, 131.5, 128.6, 128.4, 128.2, 128.1, 127.9, 127.8, 127.4, 127.2, 127.0 (q, J = 267.0 Hz), 126.8 (q, J = 264.0 Hz), 125.2, 125.0, 87.8, 87.5, 67.1, 65.7, 47.5 (q, J = 24.0 Hz), 46.7 (q, J = 24.5 Hz), 10.4, 9.1; 19F NMR (376 MHz, CDCl3) δ (ppm) -66.82 (s, 3F), -66.98 (s, 3F); IR (in KBr): 3424, 2973, 1658, 1451, 1348, 1267, 1175, 1120, 1084, 1047, 913, 745, 696 cm⁻¹; HRMS (ESI): calculated for [C18H16F3NO+H]+ requires 320.1257, found 320.1259.
2.35 (m, 1H), 2.27 – 2.22 (m, 1H); $^{13}$C NMR (100 MHz, CDCl$_3$) δ (ppm) 154.3, 141.1, 133.1, 130.8, 128.8, 128.2, 128.0, 127.0, 125.0 (q, $J$ = 276.9 Hz), 124.4, 77.4, 45.8 (q, $J$ = 31.3 Hz), $^{19}$F NMR (376 MHz, CDCl$_3$) δ (ppm) -60.70 (s, 3F); IR (in KBr): 3432, 3064, 2931, 1659, 1448, 1379, 1262, 1126, 1069, 911, 699 cm$^{-1}$; HRMS (ESI): calculated for [C$_{18}$H$_{16}$F$_3$NO$^+$Na]$^+$ requires 342.1076, found 342.1068.

Diethyl 2-((2,5-diphenyl-4,5-dihydrooxazol-5-yl)methyl)malonate (3r): Brown oil, 82% yield. $^1$H NMR (600 MHz, CDCl$_3$) δ (ppm) 7.99 (d, $J$ = 7.7 Hz, 2H), 7.51 (d, $J$ = 7.1 Hz, 1H), 7.45 (t, $J$ = 7.5 Hz, 2H), 7.39 – 7.35 (m, 4H), 7.30 (d, $J$ = 5.9 Hz, 1H), 4.27 (d, $J$ = 14.8 Hz, 1H), 4.17 (d, $J$ = 15.0 Hz, 1H), 4.15 – 3.93 (m, 3H), 3.87 – 3.82 (m, 1H), 3.43 (t, $J$ = 6.3 Hz, 1H), 2.78 (d, $J$ = 6.4 Hz, 2H), 1.16 (t, $J$ = 7.1 Hz, 3H), 1.08 (t, $J$ = 7.1 Hz, 3H); $^{13}$C NMR (100 MHz, CDCl$_3$) δ (ppm) 169.0, 168.9, 162.6, 142.9, 131.4, 128.6, 128.3, 128.1, 127.6, 127.5, 124.7, 87.8, 68.5, 61.5 (overlap), 48.2, 39.8, 13.8, 13.7; IR (in KBr): 3429, 2977, 2932, 1733, 1653, 1633, 1448, 1370, 1268, 1151, 1050, 776, 697 cm$^{-1}$; HRMS (ESI): calculated for [C$_{23}$H$_{25}$NO$_5$+Na]$^+$ requires 418.1625, found 418.1612.

Diethyl 2-((2-phenyl-5-(p-tolyl)-4,5-dihydrooxazol-5-yl)methyl)malonate (3s): Brown oil, 85% yield. $^1$H NMR (600 MHz, CDCl$_3$) δ (ppm) 7.98 (d, $J$ = 7.6 Hz, 2H), 7.50 (t, $J$ = 7.5 Hz, 1H), 7.44 (t, $J$ = 7.6 Hz, 2H), 7.43 (t, $J$ = 7.1 Hz, 3H), 1.16 (t, $J$ = 7.1 Hz, 3H), 1.09 (t, $J$ = 7.1 Hz, 3H); $^{13}$C NMR (100 MHz, CDCl$_3$) δ (ppm) 169.0, 168.9, 162.6, 139.8, 137.2, 131.3, 129.2, 128.2, 128.0, 127.4, 125.8, 87.8, 68.4, 61.4 (overlap), 48.1, 39.7, 20.8, 13.7, 13.6; IR (in KBr): 2982, 2933, 2871, 1733, 1653, 1580, 1514, 1449, 1347, 1269, 1236, 1152, 1099, 1053, 1025, 818, 696 cm$^{-1}$; HRMS (ESI): calculated for [C$_{24}$H$_{27}$NO$_5$+Na]$^+$ requires 432.1781, found 432.1773.

Diethyl 2-((5-(naphthalen-2-yl)-2-phenyl-4,5-dihydrooxazol-5-yl)methyl)malonate (3t): Brown oil, 77% yield. $^1$H NMR (600 MHz, CDCl$_3$) δ (ppm) 8.04 (d, $J$ = 7.5 Hz, 2H), 7.91 – 7.86 (m, 2H), 7.84 (t, $J$ = 8.1 Hz, 2H), 7.54 (t, $J$ = 7.3 Hz, 1H), 7.51 – 7.45 (m, 4H), 7.42 (d, $J$ = 8.6 Hz, 1H), 4.34 (d, $J$ = 14.7 Hz, 1H), 4.26 (d, $J$ = 14.7 Hz, 1H), 4.18 – 4.12 (m, 1H), 4.11 – 4.04 (m, 1H), 3.94 – 3.89 (m, 1H), 3.74 – 3.69 (m, 1H), 3.47 (t, $J$ = 6.3 Hz, 1H), 2.92 – 2.83 (m, 2H), 1.17 (t, $J$ = 7.1 Hz, 3H), 0.98 (t, $J$ = 7.1 Hz, 3H); $^{13}$C NMR (100 MHz, CDCl$_3$) δ (ppm) 169.0, 168.8, 162.6, 139.8, 137.2, 131.3, 129.2, 128.2, 128.0, 127.5, 124.5, 87.8, 68.4, 61.4 (overlap), 48.1, 39.7, 20.8, 13.7, 13.6; IR (in KBr): 3441, 2981, 2852, 1732, 1653, 1580, 1514, 1499, 1347, 1269, 1236, 1152, 1099, 1053, 1025, 818, 696 cm$^{-1}$; HRMS (ESI): calculated for [C$_{27}$H$_{27}$NO$_5$+Na]$^+$ requires 468.1781, found 468.1773.

Diethyl 2-((5-phenyl-2-(pyridin-2-yl)-4,5-dihydrooxazol-5-yl)methyl)malonate (3u): Brown oil, 42% yield. $^1$H NMR (600 MHz, CDCl$_3$) δ (ppm) 9.17 (s, 1H), 8.74 (d, $J$ = 4.8 Hz, 1H), 8.26 (d, $J$ = 8.0 Hz, 1H), 7.42 – 7.36 (m, 5H), 7.31 (t, $J$ = 6.7 Hz, 1H), 4.28 (d, $J$ = 15.0 Hz, 1H), 4.20 – 4.09 (m, 3H), 4.05 – 4.00 (m, 1H), 3.92 – 3.85 (m, 1H), 3.41 (t, $J$ = 6.4 Hz, 1H), 2.79 (d, $J$ = 6.4 Hz, 2H), 1.16 (t, $J$ = 7.1 Hz, 3H), 0.98 (t, $J$ = 7.1 Hz, 3H); $^{13}$C NMR (100 MHz, CDCl$_3$) δ (ppm) 169.0, 168.8, 162.6, 139.8, 137.2, 131.3, 129.2, 128.0, 127.4, 125.8, 87.8, 68.4, 61.4 (overlap), 48.1, 39.7, 20.8, 13.7, 13.6; IR (in KBr): 3441, 2981, 2852, 1732, 1653, 1580, 1514, 1499, 1347, 1269, 1236, 1152, 1099, 1053, 1025, 859, 778, 696 cm$^{-1}$; HRMS (ESI): calculated for [C$_{27}$H$_{27}$NO$_5$+Na]$^+$ requires 468.1781, found 468.1773.
S15

Hz, 2H), 1.20 (t, J = 7.1 Hz, 3H), 1.11 (t, J = 7.1 Hz, 3H); ^13^C NMR (150 MHz, CDCl_3) δ (ppm) 169.0, 168.7, 160.6, 152.1, 149.2, 142.3, 135.5, 127.8, 124.6, 123.6, 123.2, 88.4, 68.4, 61.6, 61.6, 48.0, 39.7, 13.8, 13.7; IR (in KBr): 3450, 2982, 2934, 1732, 1657, 1592, 1447, 1332, 1272, 1236, 1153, 1081, 1023, 745, 706 cm⁻¹; HRMS (ESI): calculated for [C_{22}H_{24}N_{2}O_{5}+Na]^+ requires 419.1577, found 419.1562.

**Diethyl 2-(2,6-diphenyl-5,6-dihydro-4^-H^-1,3-oxazin-6-yl)malonate (3v):** Brown oil, 55% yield. ^1H NMR (600 MHz, CDCl_3) δ (ppm) 8.01 (d, J = 7.3 Hz, 2H), 7.47 (t, J = 7.3 Hz, 1H), 7.42 (t, J = 7.4 Hz, 2H), 7.36 – 7.32 (m, 2H), 7.28 (d, J = 8.0 Hz, 3H), 4.15 – 4.08 (m, 2H), 4.01 – 3.95 (m, 1H), 3.91 – 3.84 (m, 1H), 3.61 – 3.54 (m, 1H), 3.47 (t, J = 6.2 Hz, 1H), 3.16 – 3.03 (m, 1H), 2.72 (d, J = 6.2 Hz, 2H), 2.32 – 2.20 (m, 1H), 2.15 – 2.05 (m, 1H), 1.20 (t, J = 7.1 Hz, 3H), 1.12 (t, J = 7.1 Hz, 3H); ^13^C NMR (100 MHz, CDCl_3) δ (ppm) 169.3, 169.0, 154.3, 141.6, 133.6, 130.5, 128.7, 128.0, 127.6, 124.8, 80.0, 61.5 (overlap), 47.3, 40.7, 40.5, 32.4, 13.9, 13.8; IR (in KBr): 3435, 2981, 2935, 1732, 1658, 1493, 1447, 1370, 1349, 1279, 1140, 1099, 1067, 1029, 765, 699 cm⁻¹; HRMS (ESI): calculated for [C_{24}H_{27}NO_{5}+Na]^+ requires 432.1781, found 432.1768.

**4-Methyl-2-phenyl-4-(2,2,2-trifluoroethyl)-4^-H^-benzo[d][1,3]oxazine (5a):** White Solid, 74% yield. M.P.: 66 - 68 °C; ^1H NMR (600 MHz, CDCl_3) δ (ppm) 8.01 (d, J = 7.3 Hz, 2H), 1.90 (s, 3H); ^13^C NMR (100 MHz, CDCl_3) δ (ppm) 155.6, 138.3, 132.2, 131.5, 129.3, 128.2, 126.0, 125.9, 125.1 (q, J = 275.7 Hz), 122.5, 76.6, 43.6 (q, J = 27.1 Hz), 26.3; ^19^F NMR (376 MHz, CDCl_3) δ (ppm) -60.99 (s, 3F); IR (in KBr): 3443, 1628, 1600, 1574, 1485, 1452, 1370, 1323, 1258, 1154, 1133, 1066, 1089, 913, 764, 747, 696 cm⁻¹; HRMS (ESI): calculated for [C_{17}H_{14}F_{3}NO+Na]^+ requires 328.0920, found 328.0887.

**2,4-Diphenyl-4-(2,2,2-trifluoroethyl)-4^-H^-benzo[d][1,3]oxazine (5b):** White Solid, 94% yield. M.P.: 97 - 99 °C; ^1H NMR (600 MHz, CDCl_3) δ (ppm) 8.35 (d, J = 8.0 Hz, 2H), 7.59 – 7.55 (m, 1H), 7.53 (t, J = 7.2 Hz, 2H), 7.45 – 7.40 (m, 4H), 7.38 – 7.30 (m, 2H), 7.23 – 7.21 (m, 1H), 7.11 (d, J = 7.6 Hz, 1H), 2.89 – 2.81 (m, 1H), 2.64 – 2.55 (m, 1H), 1.90 (s, 3H); ^13^C NMR (150 MHz, CDCl_3) δ (ppm) 155.4, 141.5, 138.6, 131.9, 131.6, 129.4, 128.5, 128.4, 128.3, 127.9, 126.5, 125.8, 125.4, 124.8 (q, J = 277.7 Hz), 124.2, 80.0, 43.3 (q, J = 27.2 Hz); ^19^F NMR (376 MHz, CDCl_3) δ (ppm) -59.65 (s, 3F); IR (in KBr): 3442, 1628, 1598, 1574, 1485, 1453, 1375, 1321, 1264, 1129, 1082, 912, 764, 745, 697 cm⁻¹; HRMS (ESI): calculated for [C_{22}H_{16}F_{3}NO+H]^+ requires 368.1251, found 368.1270.

**6-Chloro-2,4-diphenyl-4-(2,2,2-trifluoroethyl)-4^-H^-benzo[d][1,3]oxazine (5c):** White Solid, 98% yield. M.P.: 118 - 120 °C; ^1H NMR (600 MHz, CDCl_3) δ (ppm) 8.23 (d, J = 7.4 Hz, 2H), 7.56 – 7.50 (m, 1H), 7.50 – 7.42 (m, 2H), 7.38 – 7.25 (m, 7H), 7.17 (d, J = 6.2 Hz, 1H), 3.33 – 3.15 (m, 2H); ^13^C NMR (100 MHz, CDCl_3) δ (ppm) 155.6, 140.9, 137.3, 131.8, 131.6, 129.6, 128.7, 128.6, 128.4, 128.0, 127.7, 127.2, 125.3, 124.6 (q, J = 277.5 Hz), 124.3, 79.8, 43.3 (q, J = 27.6 Hz); ^19^F NMR (376 MHz, CDCl_3) δ (ppm) -59.74 (s, 3F); IR (in KBr): 3446, 3065, 1626, 1576, 1474, 1374, 1315, 1260, 1133, 1082, 911, 833, 743,
695 cm$^{-1}$; HRMS (ESI): calculated for [C$_{22}$H$_{15}$ClF$_{3}$NO+H]$^+$ requires 402.0867, found 402.0908.

**2-(Tert-butyl)-4-phenyl-4-(2,2,2-trifluoroethyl)-4H-benzo[d][1,3]oxazine (5d):** Colorless oil, 88% yield. $^1$H NMR (600 MHz, CDCl$_3$) $\delta$ (ppm) 7.34 – 7.29 (m, 4H), 7.28 – 7.25 (m, 2H), 7.24 (d, $J = 7.8$ Hz, 1H), 7.20 (t, $J = 7.5$ Hz, 1H), 7.08 (d, $J = 7.6$ Hz, 1H), 3.25 – 3.16 (m, 2H), 1.24 (s, 9H); $^{13}$C NMR (150 MHz, CDCl$_3$) $\delta$ (ppm) 166.1, 142.9, 138.6, 129.2, 128.5, 128.3, 125.9, 125.8, 125.6, 124.9, 124.8 (q, $J = 277.7$ Hz), 124.0, 79.3, 43.5 (q, $J = 27.0$ Hz), 37.2, 27.5; $^{19}$F NMR (376 MHz, CDCl$_3$) $\delta$ (ppm) -59.67 (s, 3F); IR (in KBr): 3423, 2975, 1638, 1601, 1485, 1456, 1372, 1306, 1129, 914, 768, 746, 698 cm$^{-1}$; HRMS (ESI): calculated for [C$_{20}$H$_{20}$F$_{3}$NO+Na]$^+$ requires 370.1389, found 370.1386.

**Diethyl 2-((2,4-diphenyl-4H-benzo[d][1,3]oxazin-4-yl)methyl)malonate (5e):** White solid, 56% yield. M.P.: 107 - 109 °C; $^1$H NMR (600 MHz, CDCl$_3$) $\delta$ (ppm) 8.18 (d, $J = 7.7$ Hz, 2H), 7.50 (t, $J = 7.1$ Hz, 1H), 7.45 (t, $J = 7.6$ Hz, 2H), 7.40 – 7.37 (m, 1H), 7.35 (d, $J = 4.6$ Hz, 2H), 7.33 – 7.28 (m, 3H), 7.25 – 7.18 (m, 3H), 4.15 – 4.03 (m, 3H), 3.90 – 3.83 (m, 1H), 3.68 – 3.64 (m, 1H), 3.29 – 3.22 (m, 1H), 3.18 – 3.11 (m, 1H), 1.20 (t, $J = 7.1$ Hz, 3H), 1.05 (t, $J = 7.1$ Hz, 3H); $^{13}$C NMR (100 MHz, CDCl$_3$) $\delta$ (ppm) 169.5, 169.1, 155.8, 142.8, 139.8, 132.1, 131.5, 129.3, 128.3, 128.2, 127.8, 126.6, 126.2, 125.9, 125.8, 125.4, 124.2, 83.4, 61.7, 61.4, 48.8, 39.1, 13.8, 13.7; IR (in KBr): 3450, 3063, 2982, 1732, 1626, 1598, 1573, 1480, 1451, 1370, 1319, 1262, 1181, 1152, 1089, 1048, 913, 767, 745, 697 cm$^{-1}$; HRMS (ESI): calculated for [C$_{28}$H$_{27}$NO$_5$+Na]$^+$ requires 480.1781, found 480.1766.

**Diethyl 2-((2-(tert-butyl)-4-phenyl-4H-benzo[d][1,3]oxazin-4-yl)methyl)malonate (5f):** White solid, 55% yield. M.P.: 105 - 107 °C; $^1$H NMR (600 MHz, CDCl$_3$) $\delta$ (ppm) 7.34 (t, $J = 7.3$ Hz, 1H), 7.26 – 7.23 (m, 4H), 7.23 – 7.18 (m, 4H), 4.29 – 4.24 (m, 1H), 4.14 – 4.01 (m, 3H), 3.64 – 3.60 (m, 1H), 3.29 – 3.22 (m, 1H), 3.05 – 3.01 (m, 1H), 1.24 (t, $J = 7.1$ Hz, 3H), 1.20 (t, $J = 7.1$ Hz, 3H), 1.14 (s, 9H); $^{13}$C NMR (100 MHz, CDCl$_3$) $\delta$ (ppm) 169.2, 167.2, 143.0, 140.2, 129.2, 128.2, 128.0, 126.3, 126.2, 126.1, 125.4, 124.7, 124.7, 82.8, 61.7, 61.4, 48.8, 38.4, 37.2, 27.4, 13.9, 13.8; IR (in KBr): 3452, 2979, 2933, 1734, 1633, 1600, 1580, 1484, 1454, 1369, 1265, 1185, 1148, 1030, 804, 770, 700, 588 cm$^{-1}$; HRMS (ESI): calculated for [C$_{26}$H$_{31}$NO$_5$+Na]$^+$ requires 460.2054, found 460.2058.
8. Copies of $^1$H NMR, $^{13}$C NMR and $^{19}$F NMR Spectra