DMAP-Catalyzed Regel-Type Direct C-2 (Hetero)Aroylation of Oxazoles and Thiazoles Derivatives with Acid Chlorides

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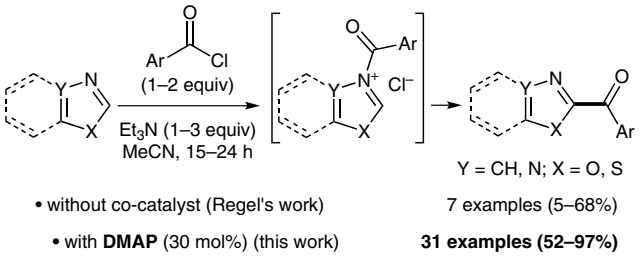
Abstract: A Regel-type transition-metal-free direct C-2 aroylation of (benzo)oxazoles, (benzo)thiazoles and 1,3,4-oxadiazoles with acid chlorides catalyzed by *N*,*N*-dimethyl-4-aminopyridine (DMAP) is described. This methodology is effective with several aroyl and heteroaroyl chlorides affording the corresponding 2-ketoazoles in moderate to excellent yields.

Key words: acylation, azoles, C–H functionalization, heterocycles, metal-free, regioselectivity

1,3-Diazoles are common features of a wide range of biologically active natural products and drugs.[1] Among the diverse synthetic strategies to prepare substituted 1,3-diazoles, efficient methods for direct C-2 substitution have attracted much interests.[2] The commonly employed methodology for C-2 acylation, including aroylation, consists in preparing 2-metallated 1,3-diazoles intermediates, which are either condensed or engaged in cross-coupling reactions with acyl chlorides or Weinreb's amides.[2,3] The current development of transition-metal-catalyzed C–H functionalization reactions, which avoid the prior preparation of heteroaryl metals,[4] has also drawn much attention. In this context, Beller recently improved the palladium-catalyzed C–H arylation methodologies of 1,3-diazoles with halides to propose a novel carbonylative coupling process, by use of carbon monoxide as carbonylative agent.[5] Metal-free processes present a more valuable and challenging alternative, and thus spark considerable interest.[6] Notably, Wu recently disclosed a direct ring-opening aroylation of benzothiazole with aryl ketones.[7] Paradoxically, the most famous metal-free strategy of selective C-2 aroylation of 1,3-diazoles was reported by Regel and Büchel thirty years ago.[8] Hence they highlighted that the treatment of 1,3-diazoles with acyl chlorides in the presence of a smooth base did not undergo the expected electrophilic aromatic acylation at the most nucleophilic site. In fact, a more valuable base-mediated electrophilic substitution takes place at the most acidic C-2 site, involving the formation of a 1,3-diazolium ylide rapidly trapped with acyl chlorides. Although this methodology proved to be highly efficient for the C-2 aroylation of imidazole derivatives,[8a] less electron-rich 1,3-diazole such as (benzo)oxazoles, (benzo)thiazoles and 1,3,4-oxadiazoles have displayed a poor to modest reactivity (Scheme 1).[8b] In this letter, we reinvestigate Regel's base-mediated electrophilic aroylation methodology and we demonstrate that the use of DMAP as catalyst may dramatically improve the effectiveness of the initial procedure on a broad panel of 1,3-diazoles (Scheme 1).



Scheme 1 Former and new Regel-type direct aroylation of 1,3-diazoles with aroyl chlorides

As first set of experiments, benzothiazole (**1a**) was allowed to react with one equivalent of benzoyl chloride in acetonitrile using a stoichiometric amount of triethylamine, strictly following Regel's protocol.[8b] The expected 2-benzoylbenzothiazole (**2a**) was isolated in a low 25% yield (Table 1, entry 1). The production of **2a** was then significantly improved to 63% yield when two equivalents of benzoyl chloride were employed, along with increasing the amount of triethylamine (3 equiv) as well as the reaction temperature (Table 1, entries 2 and 3). Therefore, a longer time of reaction (72 h) did not improve the conversion of starting material **1a**, which remains the main limitation of the yield (Table 1, entry 3). Surprisingly, stronger bases such as Hünig's base or DBU, which are expected to facilitate the formation of the ylide, could not achieve the direct aroylation of **1a** (Table 1, entries 5 and 6). We then focused directly on various means to improve the reactivity of the aroyl chloride. Pleasingly, one of the most available activating agents (DMAP) immediately proved to be efficient, affording **2a** in a good 82% yield (Table 1, entry 7). The best performance was observed in the presence of 30 mol% of DMAP catalyst and two equivalents of benzoyl chloride in acetonitrile. Indeed, all direct benzoylations of **1a** conducted in optimal conditions using less or more polar solvents, such as 1,4-dioxane, 1,2-DCE and DMF, respectively, afforded **2a** in lower yields (Table 1, entries 9–11). At this stage, two other acylating agents were evaluated, benzoic anhydride and benzyl chloroformate. Nevertheless, both reactions

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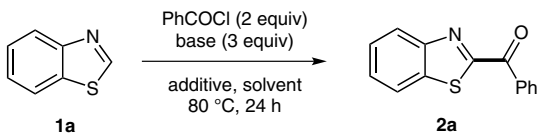
Table 1 Study of Direct Aroylation of Benzothiazole **1a**[a]



1a **2a**

Entry	Solvent	Base	Additive (%)	Yield (%) of **2a**[b]
1	MeCN	Et_3N	–	25[c]
2	MeCN	Et_3N	–	48[d]
3	MeCN	Et_3N	–	63 (64)[e]
4	Et_3N	–	–	59 (63)[e]
5	MeCN	DIPEA	–	25[e]
6	MeCN	DBU	–	n.r.
7	MeCN	Et_3N	DMAP (30)	**82** (54)[f]
8	MeCN	Et_3N	DMAP (10)	75
9	1,4-dioxane	Et_3N	DMAP (30)	48
10	1,2-DCE	Et_3N	DMAP (30)	70
11	DMF	Et_3N	DMAP (30)	68
12	MeCN	Et_3N	DMAP (30)	n.r.[g]
13	MeCN	Et_3N	DMAP (30)	n.r.[h]

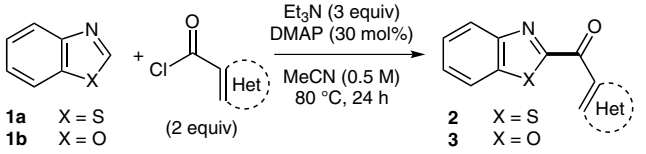
[a] Unless otherwise specified, reactions were carried out at 0.5 M on 1-mmol scale. 1,2-DCE = 1,2-dichloroethane; DIPEA = diisopropylethylamine; DBU = 1,8-diazabicyclo[5.4.0]undec-7-ene; DMAP = *N*,*N*-dimethyl-4-aminopyridine.
[b] Yield based on isolated product after flash chromatography; n.r. = no reaction.
[c] Benzothiazole (1 equiv), benzoyl chloride (1 equiv), Et_3N (1 equiv) in MeCN at r.t. for 15 h.
[d] Benzothiazole (1 equiv), benzoyl chloride (1.2 equiv), Et_3N (2 equiv) in MeCN at r.t. for 15 h.
[e] Reaction time was extended to 72 h.
[f] Amount of benzoyl chloride used: 1.2 equiv.
[g] Benzoic anhydride (2 equiv) was employed as the coupling partner.
[h] Benzyl chloroformate (2 equiv) was employed as the coupling partner.

failed and starting material **1a** was completely recovered (Table 1, entries 12 and 13).

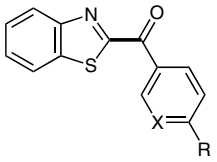
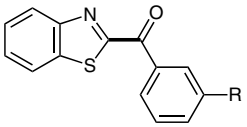
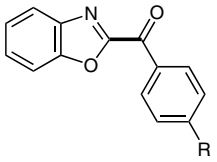
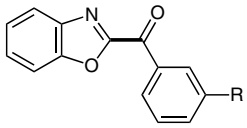
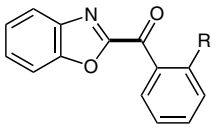
With the optimal conditions in hands (Table 1, entry 7), the scope of the direct aroylation of benzothiazole **1a** with several acid chlorides was first investigated. The results are summarized in Table 2. Aroyl chlorides bearing either electron-donating or electron-withdrawing groups, such as highly valuable chlorine, cyano and methoxy groups, were suitable electrophiles, providing the expected aroylated benzothiazoles **2b**–**d** and **2f** in fair yields (Table 2, entries 1–3, and 5). Heteroaroylation of **1a** was also successfully achieved through the production of nicotinoylbenzoxazole **2e** in 58% yield (Table 2, entry 4). Interestingly, the protocol remains highly efficient for the benzoylation of the less electron-rich benzoxazole, yielding the desired 2-benzoylbenzoxazole **3a** in a modest 66% yield (Table 2, entry 6). Furthermore, a broad panel of aroyl chlorides bearing either electron-donating or electron-withdrawing groups were successfully coupled (Table 2, entries 5–10), with a poor influence of the electronic effect. The results are even sometimes slightly better than those obtained with benzothiazole analogue (Table 2, entries 7–9).

Encouraged by this first success, the direct aroylation procedure was then evaluated on less electron-rich 1,3-diazoles.

Table 2 Scope of the Direct C-2 Aroylation of Benzoxazole and Benzothiazole with Various Aroyl Chloride[a]



1a X = S
1b X = O
2 X = S
3 X = O

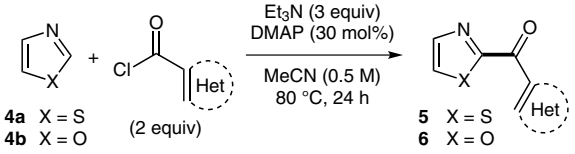
Entry	Product	X	R		Yield (%)[b]
1		CH	OMe	**2b**	64
2		CH	CN	**2c**	66
3		CH	Cl	**2d**	65
4		N	Cl	**2e**	58
5		–	Cl	**2f**	76
6			H	**3a**	66
7		–	OMe	**3b**	83
8			Cl	**3c**	72
9		–	Cl	**3d**	77
10		–	OMe	**3e**	56

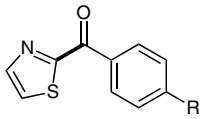
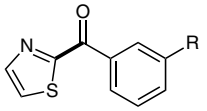
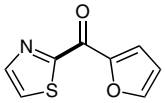
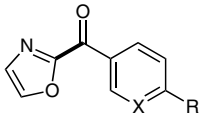
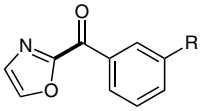
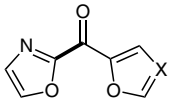
[a] Reaction conditions: azole (1 mmol), aroyl chloride (2 equiv), Et_3N (3 equiv), DMAP (30 mol%) in MeCN (2 mL), 80 °C, 24 h.
[b] Yield based on isolated product after flash chromatography.

We first engaged unsubstituted thiazole (**4a**) and oxazole (**4b**) in the aroylation reaction under optimized conditions. The results depicted in Table 3 clearly showed that both substrates were excellent candidates for aroylation under this newly developed procedure, using either benzoyl chloride (Table 3, entries 1 and 5) or variously substituted aroyl chlorides (Table 3, entries 2, 3, 6 and 8). According to the electrophilic substitution mechanism initially proposed by Regel, all conducted aroylations of

4a and **4b** occurred selectively at the most acidic C-2 position,[9] without any influence of the aromatic substitution. The procedure remains also effective for the C-2 heteroaroylation of **4a** and **4b** with 6-chloronicotinoyl chloride and 2-furanoyl chloride, leading to the corresponding diheteroaryl ketones **5d**, **6c** and **6e** in good yields (Table 3, entries 4, 7 and 9). The bisoxazol-2-yl ketone (**6f**) was finally prepared in a modest 59% yield (Table 3, entry 10), in a 'single flask' procedure starting from commercially available oxazole 5-carboxylic acid (see experimental part for details). This diheteroaryl ketone constitutes, in particular, a precursor to the main heterocyclic core of bengazoles.[10]

Table 3 Scope of the Direct C-2 Aroylation of Oxazole and Thiazole[a]



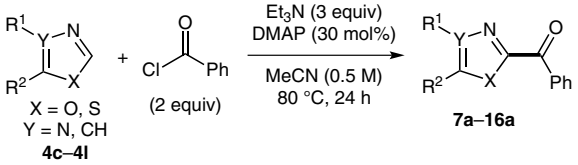
Entry	Product	X	R		Yield (%)[b]
1		–	H	**5a**	93
2		–	OMe	**5b**	90
3		–	Cl	**5c**	69
4		–	–	**5d**	88
5		CH	H	**6a**	92
6		CH	OMe	**6b**	90
7		N	Cl	**6c**	92
8		–	Cl	**6d**	97
9		CH		**6e**	83
10		N		**6f**	59

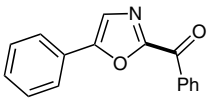
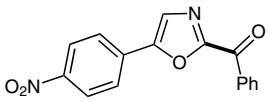
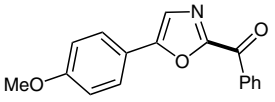
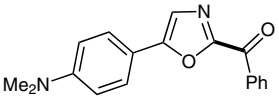
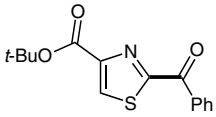
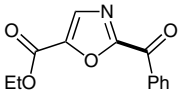
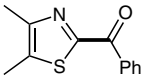
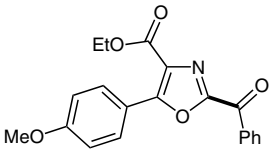
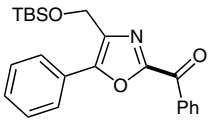
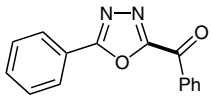
[a] Reaction conditions: azole (1 mmol), aroyl chloride (2 equiv), Et_3N (3 equiv), DMAP (30 mol%) in MeCN (2 mL), 80 °C, 24 h.
[b] Yield based on isolated product after flash chromatography.

To conclude the scope evaluation of the direct aroylation procedure in 1,3-diazoles series, several substituted 1,3-diazoles were evaluated, including the deactivated 4- and 5-oxa(thia)zolecarboxylates and the even more challenging 2-phenyl-1,3,4-oxadiazole.

We first observed that 5-aryloxazoles **4c**–**4f**, including models bearing highly electron-donating and electron-withdrawing groups, displayed a remarkable reactivity and the expected 2-benzoylated 5-aryloxazoles **7a**–**10a** were isolated in excellent yields (Table 4, entries 1–4). In addition, this protocol successfully achieved the benzo-

Table 4 Direct Benzoylation of Azoles under Standard Conditions[a]



Entry	SM[b]	Product		Yield (%)[c]
1	**4c**		**7a**	89
2	**4d**		**8a**	90
3	**4e**		**9a**	80
4	**4f**		**10a**	96
5	**4g**		**11a**	53
6	**4h**		**12a**	79
7	**4i**		**13a**	76
8	**4j**		**14a**	52
9	**4k**		**15a**	54
10	**4l**		**16a**	80

[a] Reaction conditions: azole (1 mmol), benzoyl chloride (2 equiv), Et_3N (3 equiv), DMAP (30 mol%) in MeCN (2 mL), 80 °C, 24 h.
[b] SM = Starting material.
[c] Yield based on isolated product after flash chromatography.

ylation of thiazole-4-carboxylate (**4g**), oxazole-5-carboxylate (**4h**) and 4,5-dimethylthiazole (**4i**) in fair to high yields (Table 4, entries 5–7). However, an exception to this excellent reactivity was noticed when the reaction was carried out with ethyl oxazole-4-carboxylate, which led only to an inseparable mixture of benzoylated product and benzoic anhydride in a poor yield. Interestingly, this modest reactivity could be restored by increasing the electron-richness of the oxazole ring. Thus, introducing a 4-methoxyphenyl group on position C-5 or reducing the ester function to a less electron-withdrawing silylated methyl alcohol group, resulted in a clean formation of benzoylated products **14a** and **15a** in 52% and 54% yield, respectively (Table 4, entries 8 and 9). The much better performance of this novel DMAP-catalyzed aroylation methodology against the initial Regel's procedure was finally evidenced through the successful benzoylation of the highly deactivated 2-phenyl-1,3,4-oxadiazole (**4l**), affording the expected benzoylated product **16a** in 80% yield (Table 4, entry 10).

In summary, we have developed a novel DMAP-mediated Regel-type direct C-2 aroylation of various 1,3-diazoles with a broad panel of aroyl chlorides. This general and efficient methodology allows the metal-free preparation of valuable diheteroaryl ketones, which are found in natural products and pharmaceuticals.

All commercially available reagents were used as received, except otherwise specified. MeCN, DMF and 1,4-dioxane were obtained from Acros Organics® in sealed bottles over 3 Å or 4 Å molecular sieves under N_2, and were used without further purification. Et_3N was distilled from CaH_2. DIEA was distilled over KOH and stored over 4 Å molecular sieves under N_2. Liquid or low-melting solid acyl chlorides were purified by distillation under reduced pressure before each use.

General Procedure: DMAP (37 mg, 30 mol%), aroyl chloride (if solid; 2 mmol, 2 equiv) and azole (if solid; 1 mmol, 1 equiv) were weighed in a sealable tube. The tube was sealed and flushed with a stream of dry N_2. MeCN (2 mL) was added, followed by Et_3N (420 µL, 3 equiv). Azole (1 mmol, 1 equiv) and aroyl chloride (2 mmol, 2 equiv) were added dropwise to the reaction mixture, and stirred for 24 h at 80 °C. The mixture was then cooled to r.t., diluted with EtOAc and sat. aq $NaHCO_3$, and extracted with EtOAc (2 ×). Combined organic layers were washed with brine, dried over $MgSO_4$ and concentrated in vacuo. Purification by flash column chromatography (SiO_2) afforded the desired product.

Benzothiazol-2-yl-(phenyl)methanone (2a):[11] Prepared according to the general procedure, using benzothiazole (110 µL, 1 mmol), benzoyl chloride (230 µL, 2 equiv), Et_3N (420 µL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 96:4) afforded **2a** as a colorless solid (197 mg, 82%). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.55–8.56 (m, 2 H), 8.23–8.26 (m, 1 H), 7.99–8.03 (m, 1 H), 7.64–7.70 (m, 1 H), 7.51–7.61 (m, 4 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 185.4 (C), 167.2 (C), 154.0 (C), 137.1 (C), 135.1 (C), 134.0 (CH), 131.4 (CH), 128.6 (CH), 127.7 (CH), 127.0 (CH), 125.8 (CH), 122.3 (CH).

Benzothiazol-2-yl-(4-methoxyphenyl)methanone (2b):[5] Prepared according to the general procedure, using benzothiazole (110 µL, 1 mmol), 4-methoxybenzoyl chloride (270 µL, 2 mmol), Et_3N (420 µL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 9:1) afforded **2b** as a colorless solid (175 mg, 64%). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.65 (app d, *J* = 9.0 Hz, 2 H), 8.21–8.24 (m, 1 H), 7.98–8.02 (m, 1 H), 7.49–7.60 (m, 2 H), 7.04 (app d, *J* = 9.0 Hz, 2 H), 3.91 (s, 3 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 183.5 (C), 168.0 (C), 164.5 (C), 154.0 (C), 137.0 (C), 134.0 (CH), 127.9 (C), 127.5 (CH), 126.9 (CH), 125.6 (CH), 122.2 (CH), 114.0 (CH), 55.7 (Me).

4-(Benzothiazole-2-carbonyl)benzonitrile (2c):[12] Prepared according to the general procedure, using benzothiazole (110 µL, 1 mmol), 4-cyanobenzoyl chloride (331 mg, 2 mmol), Et_3N (420 µL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 8:2) afforded **2c** as a colorless solid (174 mg, 66%). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.67 (app d, *J* = 8.7 Hz, 2 H), 8.23–8.26 (m, 1 H), 8.02–8.05 (m, 1 H), 7.86 (app d, *J* = 8.7 Hz, 2 H), 7.56–7.65 (m, 2 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 184.1 (C), 166.1 (C), 153.9 (C), 138.3 (C), 137.3 (C), 132.3 (CH), 131.7 (CH), 128.3 (CH), 127.4 (CH), 126.0 (CH), 122.4 (CH), 118.2 (C), 117.0 (C).

Benzothiazol-2-yl-(4-chlorophenyl)methanone (2d):[11] Prepared according to the general procedure, using benzothiazole (110 µL, 1 mmol), 4-chlorobenzoyl chloride (256 µL, 2 mmol), Et_3N (420 µL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 95:5) afforded **2d** as a colorless solid (178 mg, 65%). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.53 (app d, *J* = 8.7 Hz, 2 H), 8.19–8.22 (m, 1 H), 7.96–7.99 (m, 1 H), 7.54 (app qd, *J* = 7.2, 1.5 Hz, 2 H), 7.50 (app d, *J* = 8.7 Hz, 2 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 184.1 (C), 166.9 (C), 153.9 (C), 140.7 (C), 137.1 (C), 133.3 (C), 132.8 (CH), 129.0 (CH), 127.9 (CH), 127.2 (CH), 125.9 (CH), 122.3 (CH).

Benzothiazol-2-yl-(6-chloropyridin-3-yl)methanone (2e): Prepared according to the general procedure, using benzothiazole (110 µL, 1 mmol), 6-chloronicotinoyl chloride (352 mg, 2 mmol), Et_3N (420 µL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 96:4) afforded **2e** as a colorless solid (159 mg, 58%); mp 120–121 °C (PE–CH_2Cl_2). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 9.62 (d, *J* = 2.1 Hz, 1 H), 8.81 (dd, *J* = 8.4, 2.1 Hz, 1 H), 8.23 (dd, *J* = 6.6, 1.8 Hz, 1 H), 8.02 (dd, *J* = 6.9, 2.4 Hz, 1 H), 7.51–7.64 (m, 3 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 183.1 (C), 166.0 (C), 156.4 (C), 153.9 (C), 153.0 (CH), 141.0 (CH), 137.2 (C), 129.7 (C), 128.4 (CH), 127.5 (CH), 126.1 (CH), 124.4 (CH), 122.4 (CH). IR (neat): 3105, 3060, 3000, 1654, 1642, 1575, 1551, 1459, 1302, 1101 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{13}H_8ClN_2OS^+$: 275.0046; found: 275.0038.

Benzothiazol-2-yl-(3-chlorophenyl)methanone (2f): Prepared according to the general procedure, using benzothiazole (110 µL, 1 mmol), 3-chlorobenzoyl chloride (256 µL, 2 mmol), Et_3N (420 µL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 95:5) afforded **2e** as a colorless solid (207 mg, 76%); mp 96–97 °C (PE–CH_2Cl_2). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.55 (t, *J* = 2.1 Hz, 1 H), 8.48 (tt, *J* = 7.8, 1.2 Hz, 1 H), 8.23–8.26 (m, 1 H), 7.99–8.02 (m, 2 H), 7.53–7.65 (m, 3 H), 7.50 (t, *J* = 7.8 Hz, 1 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 184.1 (C), 166.5 (C), 153.9 (C), 137.1 (C), 136.5 (C), 134.8 (C), 133.9 (CH), 131.2 (CH), 129.9 (CH), 129.6 (CH), 128.0 (CH), 127.2 (CH), 126.0 (CH), 122.3 (CH). IR (neat): 3086, 1651, 1637, 1586, 1564, 1485, 1462, 1423, 1293, 1265, 1132, 1122 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{14}H_9ClNOS^+$: 274.0093; found: 274.0092.

Benzoxazol-2-yl-(phenyl)methanone (3a):[5] Prepared according to the general procedure, using benzoxazole (119 mg, 1 mmol), benzoyl chloride (230 µL, 2 equiv), Et_3N (420 µL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 9:1) afforded **3a** as a colorless solid (167 mg, 66%). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.54–8.57 (m, 2 H), 7.94–7.97 (m, 1 H), 7.70–7.74 (m, 1 H), 7.69 (tt, *J* = 7.4, 1.4 Hz, 1 H), 7.45–7.60 (m, 4 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 180.7 (C), 157.2 (C), 150.6 (C), 140.9 (C), 135.1 (CH), 134.5 (CH), 131.1 (CH), 128.8 (CH), 128.6 (CH), 125.9 (CH), 122.5 (CH), 112.0 (CH).

Benzoxazol-2-yl-(4-methoxyphenyl)methanone (3b):[5] Prepared according to the general procedure, using benzoxazole (119 mg, 1

mmol), 4-methoxybenzoyl chloride (270 μL, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 85:15) afforded **3b** as a colorless solid (209 mg, 83%). ^1H NMR (300 MHz, $CDCl_3$): δ = 8.60 (app d, *J* = 9.0 Hz, 2 H), 7.91–7.94 (m, 1 H), 7.68–7.71 (m, 1 H), 7.42–7.55 (m, 2 H), 7.03 (app d, *J* = 9.0 Hz, 2 H), 3.91 (s, 3 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 178.9 (C), 164.8 (C), 157.5 (C), 150.4 (C), 140.9 (C), 133.7 (CH), 128.2 (CH), 128.1 (C), 125.7 (CH), 122.3 (CH), 114.1 (CH), 111.9 (CH), 55.7 (Me).

Benzoxazol-2-yl-(4-chlorophenyl)methanone (3c): Prepared according to the general procedure, using benzoxazole (119 mg, 1 mmol), 4-chlorobenzoyl chloride (256 μL, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 95:5) afforded **3c** as a colorless solid (186 mg, 72%); mp 100–101 °C (PE–CH_2Cl_2). ^1H NMR (300 MHz, $CDCl_3$): δ = 8.55 (app d, *J* = 9.0 Hz, 2 H), 7.92–7.95 (m, 1 H), 7.69–7.72 (m, 1 H), 7.45–7.59 (m, 2 H), 7.53 (app d, *J* = 9.0 Hz, 2 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 179.2 (C), 156.9 (C), 150.5 (C), 141.2 (C), 140.7 (C), 133.4 (C), 132.6 (CH), 129.1 (CH), 128.8 (CH), 126.0 (CH), 122.5 (CH), 112.0 (CH). IR (neat): 3102, 3064, 3028, 1657, 1582, 1523, 1477, 1381, 1208, 1154, 1093 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{14}H_9ClNO^+$: 258.0322; found: 258.0320.

Benzoxazol-2-yl-(3-chlorophenyl)methanone (3d): Prepared according to the general procedure, using benzoxazole (119 mg, 1 mmol), 3-chlorobenzoyl chloride (256 μL, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 96:4) afforded **3d** as a colorless solid (199 mg, 77%); mp 135.5–136.5 °C (PE–CH_2Cl_2). ^1H NMR (300 MHz, $CDCl_3$): δ = 8.57 (t, *J* = 1.7 Hz, 1 H), 8.50 (dt, *J* = 7.8, 1.3 Hz, 1 H), 7.96–7.99 (m, 1 H), 7.71–7.74 (m, 1 H), 7.66 (ddd, *J* = 8.0, 2.2, 1.1 Hz, 1 H), 7.47–7.61 (m, 3 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 179.3 (C), 156.8 (C), 150.6 (C), 140.8 (C), 136.5 (C), 135.0 (C), 134.4 (CH), 131.0 (CH), 130.1 (CH), 129.4 (CH), 128.9 (CH), 126.1 (CH), 122.7 (CH), 112.1 (CH). IR (neat): 3291, 3096, 3071, 3019, 1661, 1610, 1601, 1590, 1523, 1304, 1208 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{14}H_9ClNO^+$: 258.0322; found: 258.0320.

Benzoxazol-2-yl-(2-methoxyphenyl)methanone (3e): Prepared according to the general procedure, using benzoxazole (119 mg, 1 mmol), 2-methoxybenzoyl chloride (300 μL, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 85:15) afforded **3e** as a colorless solid (142 mg, 56%); mp 92–93 °C (PE–CH_2Cl_2). ^1H NMR (300 MHz, $CDCl_3$): δ = 7.85–7.88 (m, 1 H), 7.74 (dd, *J* = 7.6, 1.8 Hz, 1 H), 7.64–7.66 (m, 1 H), 7.39–7.59 (m, 3 H), 7.09 (td, *J* = 7.5, 0.8 Hz, 1 H), 7.0 (d, *J* = 8.4 Hz, 1 H), 3.75 (s, 3 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 183.1 (C), 159.1 (C), 158.4 (C), 150.6 (C), 140.9 (C), 134.5 (CH), 131.0 (CH), 128.1 (CH), 126.3 (C), 125.6 (CH), 122.3 (CH), 120.7 (CH), 112.1 (CH), 111.8 (CH), 56.0 (Me). IR (neat): 3070, 2960, 2933, 1669, 1596, 1578, 1535, 1462, 1245, 1160 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{15}H_{12}NO^+$: 254.0817; found: 254.0818.

Phenyl(thiazol-2-yl)methanone (5a):[9] Prepared according to the general procedure, using thiazole (71 μL, 1 mmol), benzoyl chloride (230 μL, 2 equiv), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 8:2) afforded **5a** as a colorless solid (175 mg, 93%). ^1H NMR (300 MHz, $CDCl_3$): δ = 8.44–8.48 (m, 2 H), 8.05 (d, *J* = 3.0 Hz, 1 H), 7.68 (d, *J* = 3.0 Hz, 1 H), 7.59 (tt, *J* = 6.3, 1.2 Hz, 1 H), 7.46–7.51 (m, 2 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 184.0 (C), 167.8 (C), 144.8 (CH), 135.1 (C), 133.6 (CH), 131.0 (CH), 128.4 (CH), 126.3 (CH).

(4-Methoxyphenyl)(thiazol-2-yl)methanone (5b):[5] Prepared according to the general procedure, using thiazole (71 μL, 1 mmol), 4-methoxybenzoyl chloride (270 μL, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 8:2) afforded **5b** as a colorless solid (197 mg, 90%). ^1H NMR (300 MHz, $CDCl_3$): δ = 8.54 (app d, *J* = 9.1 Hz, 2 H), 8.03 (d, *J* = 3.3 Hz, 1 H), 7.65 (d, *J* = 3.3 Hz, 1 H), 6.97 (app d, *J* = 9.1 Hz, 2 H), 3.85 (s, 3 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 182.3 (C), 168.6 (C), 164.1 (C), 144.6 (CH), 133.7 (CH), 127.9 (C), 125.8 (CH), 113.8 (CH), 55.5 (Me).

(3-Chlorophenyl)(thiazol-2-yl)methanone (5c):[13] Prepared according to the general procedure, using thiazole (71 μL, 1 mmol), 3-chlorobenzoyl chloride (256 μL, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 9:1) afforded **5c** as a colorless solid (165 mg, 69%). ^1H NMR (300 MHz, $CDCl_3$): δ = 8.49 (t, *J* = 1.8 Hz, 1 H), 8.38 (ddd, *J* = 7.9, 1.2, 1.2 Hz, 1 H), 8.10 (d, *J* = 3.1 Hz, 1 H), 7.75 (d, *J* = 3.1 Hz, 1 H), 7.60 (ddd, *J* = 7.9, 2.2, 1.2 Hz, 1 H), 7.46 (t, *J* = 7.9 Hz, 1 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 182.8 (C), 167.3 (C), 145.2 (CH), 136.7 (C), 134.7 (C), 133.6 (CH), 131.2 (CH), 129.8 (CH), 129.3 (CH), 126.8 (CH).

Furan-2-yl-(thiazol-2-yl)methanone (5d): Prepared according to the general procedure, using thiazole (71 μL, 1 mmol), 2-furoyl chloride (200 μL, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 8:2) afforded **5d** as a colorless solid (157 mg, 88%); mp 77–78 °C (Et_2O). ^1H NMR (300 MHz, $CDCl_3$): δ = 8.19 (dd, *J* = 3.6, 0.9 Hz, 1 H), 8.05 (d, *J* = 3.0 Hz, 1 H), 7.77 (dd, *J* = 1.5, 0.6 Hz, 1 H), 7.70 (d, *J* = 3.0 Hz, 1 H), 6.63 (dd, *J* = 3.6, 1.8 Hz, 1 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 171.2 (C), 166.7 (C), 150.0 (C), 148.7 (CH), 145.0 (CH), 126.1 (CH), 124.4 (CH), 112.9 (CH). IR (neat): 3138, 3099, 3079, 2923, 1622, 1553, 1487, 1480, 1459, 1400, 1129, 1014 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_8H_6NO^+$: 180.0119; found: 180.0119.

Oxazol-2-yl-(phenyl)methanone (6a): Prepared according to the general procedure, using oxazole (66 μL, 1 mmol), benzoyl chloride (230 μL, 2 equiv), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 9:1) afforded **6a** as a colorless solid (160 mg, 92%); mp 64–65 °C (PE–CH_2Cl_2). ^1H NMR (300 MHz, $CDCl_3$): δ = 8.41–8.45 (m, 2 H), 7.88 (d, *J* = 0.3 Hz, 1 H), 7.60 (tt, *J* = 6.3, 1.2 Hz, 1 H), 7.45–7.50 (m, 2 H), 7.38 (d, *J* = 0.3 Hz, 1 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 178.8 (C), 157.8 (C), 141.6 (CH), 134.9 (C), 134.0 (CH), 130.8 (CH), 129.1 (CH), 128.5 (CH). IR (neat): 3149, 3130, 3059, 1662, 1598, 1574, 1538, 1472, 1445, 1375, 1293, 1179, 1187 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{10}H_8NO^+$: 174.0555; found: 174.0557.

(4-Methoxyphenyl)(oxazol-2-yl)methanone (6b): Prepared according to the general procedure, using oxazole (66 μL, 1 mmol), 4-methoxybenzoyl chloride (270 μL, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–CH_2Cl_2, 2:8) afforded **6b** as a colorless solid (183 mg, 90%); mp 113–114 °C (PE–Et_2O). ^1H NMR (300 MHz, $CDCl_3$): δ = 8.47 (app d, *J* = 9.3 Hz, 2 H), 7.85 (d, *J* = 0.6 Hz, 1 H), 7.34 (d, *J* = 0.6 Hz, 1 H), 6.93 (app d, *J* = 9.3 Hz, 2 H), 3.82 (s, 3 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 177.2 (C), 164.4 (C), 158.0 (C), 141.3 (CH), 133.4 (CH), 128.8 (CH), 127.8 (C), 113.8 (CH), 55.5 (Me). IR (neat): 3149, 3125, 2999, 2961, 2844, 1641, 1598, 1570, 1541, 1511, 1487, 1426, 1373, 1254, 1027 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{11}H_{10}NO^+$: 204.0661; found: 204.0664.

(6-Chloropyridin-3-yl)(oxazol-2-yl)methanone (6c): Prepared according to the general procedure, using oxazole (66 μL, 1 mmol), 6-chloronicotinoyl chloride (352 mg, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (CH_2Cl_2) afforded **6c** as a colorless solid (192 mg, 92%); mp 95–96 °C (MeCN–Et_2O). ^1H NMR (300 MHz, $CDCl_3$): δ = 9.50 (d, *J* = 2.1 Hz, 1 H), 8.74 (dd, *J* = 8.4, 2.1 Hz, 1 H), 7.95 (s, 1 H), 7.48 (d, *J* = 8.4 Hz, 1 H), 7.45 (s, 1 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 176.2 (C), 157.2 (C), 156.5 (C), 152.6 (CH), 142.4 (CH), 140.7 (CH), 129.6 (CH), 129.5 (C), 124.4 (CH). IR (neat): 3154, 3133, 3076, 1667, 1650, 1571, 1556, 1479, 1468, 1451, 1381, 1359, 1286, 1186, 1104, 1026 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_9H_6ClN_2O^+$: 209.0118; found: 209.0122.

(3-Chlorophenyl)(oxazol-2-yl)methanone (6d): Prepared according to the general procedure, using oxazole (66 μL, 1 mmol), 3-chlorobenzoyl chloride (256 μL, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 8:2) afforded **6d** as a pale yellow solid (200 mg, 97%); mp 106–107 °C (PE–CH_2Cl_2). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.50 (t, *J* = 1.8 Hz, 1 H), 8.41 (ddd, *J* = 7.8, 1.2, 1.2 Hz, 1 H), 7.93 (d, *J* = 0.6 Hz, 1 H), 7.62 (ddd, *J* = 7.8, 1.8, 1.2 Hz, 1 H), 7.48 (t, *J* = 7.8 Hz, 1 H), 7.45 (d, *J* = 0.6 Hz, 1 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 177.5 (C), 157.5 (C), 142.0 (CH), 136.5 (C), 134.9 (C), 134.1 (CH), 130.9 (CH), 130.0 (CH), 129.4 (CH), 129.2 (CH). IR (neat): 3154, 3135, 3095, 3071, 1651, 1566, 1481, 1374, 1291, 1274, 1124 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{10}H_7ClNO^+$: 208.0165; found: 208.0173.

Furan-2-yl-(oxazol-2-yl)methanone (6e): Prepared according to the general procedure, using oxazole (66 μL, 1 mmol), 2-furoyl chloride (200 μL, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–CH_2Cl_2, 8:2) afforded **6e** as a colorless solid (135 mg, 83%); mp 124–125 °C (Et_2O). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.08 (dd, *J* = 3.6, 0.6 Hz, 1 H), 7.88 (s, 1 H), 7.76 (dd, *J* = 1.5, 0.6 Hz, 1 H), 7.37 (s, 1 H), 6.61 (dd, *J* = 3.6, 1.5 Hz, 1 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 165.9 (C), 157.1 (C), 150.2 (C), 149.1 (CH), 141.8 (CH), 129.3 (CH), 124.4 (CH), 113.0 (CH). IR (neat): 3145, 3124, 2922, 1643, 1554, 1541, 1485, 1454, 1398, 1298, 1222, 1025 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_8H_6NO^+$: 164.0348; found: 164.0341.

Oxazol-2-yl-(oxazol-5-yl)methanone (6f): To a solution of oxazole-5-carboxylic acid (226 mg, 2 mmol) in anhyd CH_2Cl_2 (2 mL) was added dropwise oxalyl chloride (343 μL, 4 mmol), followed by a drop of DMF. The reaction mixture was stirred for 3.5 h (until no effervescence was observed by addition of a drop of anhyd DMF) and the solvent was evaporated. The crude acid chloride (4 mmol) was allowed to react with oxazole (66 μL, 2 mmol), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL) according to the general procedure. Purification by flash column chromatography (PE–EtOAc, 7:3) afforded **6f** as a colorless solid (96 mg, 59%); mp 128–129 °C (MeCN–Et_2O). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.60 (s, 1 H), 8.18 (s, 1 H), 7.94 (s, 1 H), 7.42 (s, 1 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 165.4 (C), 156.4 (C), 154.9 (CH), 147.6 (C), 142.5 (CH), 138.6 (CH), 129.6 (CH). IR (neat): 3148, 3122, 1665, 1650, 1638, 1560, 1458, 1401, 1320, 1224, 1138, 1090 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_7H_5N_2O^+$: 165.0300; found: 165.0297.

Phenyl(5-phenyloxazol-2-yl)methanone (7a):[3a] Prepared according to the general procedure, using 5-phenyloxazole[14] (145 mg, 1 mmol), benzoyl chloride (230 μL, 2 equiv), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 9:1) afforded **7a** as a pale yellow solid (222 mg, 89%). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.46–8.49 (m, 2 H), 7.79–7.82 (m, 2 H), 7.63 (tt, *J* = 7.3, 2.2 Hz, 1 H), 7.60 (s, 1 H), 7.40–7.54 (m, 5 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 178.6 (C), 157.0 (C), 154.1 (C), 135.3 (C), 133.8 (CH), 130.8 (CH), 130.0 (CH), 129.1 (CH), 128.5 (CH), 126.7 (C), 125.4 (CH), 124.0 (CH).

[5-(4-Nitrophenyl)oxazol-2-yl](phenyl)methanone (8a): Prepared according to the general procedure, using 5-(4-nitrophenyl)oxazole[14] (14; 190 mg, 1 mmol), benzoyl chloride (230 μL, 2 equiv), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (CH_2Cl_2–MeCN, 249:1) afforded **8a** as a colorless solid (266 mg, 90%); mp 192–193 °C (PE–CH_2Cl_2) (melts/resolidifies); second mp 197–198 °C. ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.47–8.51 (m, 2 H), 8.35 (app d, *J* = 9.0 Hz, 2 H), 8.00 (app d, *J* = 8.7 Hz, 2 H), 7.80 (s, 1 H), 7.68 (tt, *J* = 6.3, 1.2 Hz, 1 H), 7.53–7.58 (m, 2 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 178.7 (C), 158.0 (C), 151.8 (C), 148.3 (C), 135.0 (C), 134.4 (CH), 132.5 (C), 131.0 (CH), 128.8 (CH), 126.7 (CH), 126.1 (CH), 124.7 (CH). IR (neat): 3139, 3113, 3084, 1637, 1602, 1573, 1516, 1473, 1447, 1416, 1325, 1297 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{16}H_{11}N_2O^+$: 295.0719; found: 295.0709.

[5-(4-Methoxyphenyl)oxazol-2-yl](phenyl)methanone (9a): Prepared according to the general procedure, using 5-(4-methoxyphenyl)oxazole[14] (175 mg, 1 mmol), benzoyl chloride (230 μL, 2 equiv), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–CH_2Cl_2, 3:7) afforded **9a** as a yellow solid (222 mg, 80%); mp 133–134 °C (MeCN–Et_2O). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.48–8.44 (m, 2 H), 7.75 (app d, *J* = 9.0 Hz, 2 H), 7.63 (tt, *J* = 6.3, 1.2 Hz, 1 H), 7.49–7.53 (m, 2 H), 7.49 (s, 1 H), 6.98 (app d, *J* = 9.0 Hz, 2 H), 3.85 (s, 3 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 178.7 (C), 161.1 (C), 156.7 (C), 154.5 (C), 135.6 (C), 133.7 (CH), 130.8 (CH), 128.5 (CH), 127.2 (CH), 122.7 (CH), 119.4 (C), 114.7 (CH), 55.5 (Me). IR (neat): 3113, 3011, 2920, 2846, 1649, 1610, 1576, 1564, 1477, 1426, 1367, 1248, 1172 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{17}H_{14}NO^+$: 280.0974; found: 280.0973.

{5-[4-(Dimethylamino)phenyl]oxazol-2-yl}(phenyl)methanone (10a): Prepared according to the general procedure, using 5-[4-(dimethylamino)phenyl]oxazole[14] (188 mg, 1 mmol), benzoyl chloride (230 μL, 2 equiv), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 7:3) afforded **10a** as an orange solid (281 mg, 96%); mp 144–145 °C (MeCN–Et_2O). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.44–8.47 (m, 2 H), 7.69 (app d, *J* = 9.0 Hz, 2 H), 7.60–7.65 (m, 1 H), 7.52 (app t, *J* = 7.8 Hz, 2 H), 7.41 (s, 1 H), 6.73 (app d, *J* = 9.0 Hz, 2 H), 3.03 (s, 6 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 178.5 (C), 156.3 (C), 155.7 (C), 151.4 (C), 135.9 (C), 133.5 (CH), 130.8 (CH), 128.5 (CH), 126.9 (CH), 121.6 (CH), 114.3 (C), 112.1 (CH), 40.2 (Me). IR (neat): 3130, 3070, 2905, 2816, 1641, 1610, 1597, 1575, 1552, 1474, 1360, 1230, 1167 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{18}H_{17}N_2O^+$: 293.1290; found: 293.1289.

***tert*-Butyl 2-Benzoylthiazole-4-carboxylate (11a)**: Prepared according to the general procedure, using *tert*-butyl thiazole-4-carboxylate[15] (185 mg, 1 mmol), benzoyl chloride (230 μL, 2 equiv), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 8:2) afforded **11a** as a colorless solid (152 mg, 53%); mp 82–83 °C (PE–CH_2Cl_2). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.58–8.62 (m, 2 H), 8.35 (s, 1 H), 7.61–7.67 (m, 1 H), 7.50–7.55 (m, 2 H), 1.63 (s, 9 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 183.5 (C), 168.0 (C), 160.0 (C), 150.2 (C), 134.5 (C), 134.1 (CH), 132.6 (CH), 131.5 (CH), 128.7 (CH), 82.7 (C), 28.3 (Me). IR (neat): 3093, 2990, 2929, 1717, 1651, 1596, 1586, 1470, 1287, 1241, 1102 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{15}H_{16}NO_3S^+$: 290.0851; found: 290.0845.

Ethyl 2-Benzoyloxazole-5-carboxylate (12a): Prepared according to the general procedure, using ethyl oxazole-5-carboxylate (152 mg, 1 mmol), benzoyl chloride (230 μL, 2 equiv), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (CH_2Cl_2) afforded **12a** as a pale yellow oil (193 mg, 79%). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.40–8.44 (m, 2 H), 7.94 (s, 1 H), 7.65 (tt, *J* = 6.6, 1.2 Hz, 1 H), 7.49–7.55 (m, 2 H), 4.43 (q, *J* = 7.2 Hz, 2 H), 1.40 (t, *J* = 7.2 Hz, 3 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 178.6 (C), 158.3 (C), 157.2 (C), 144.2 (C), 134.6 (C), 134.5 (CH), 134.4 (CH), 131.0 (CH), 128.7 (CH), 62.3 (CH_2), 14.3 (Me). IR (neat): 3151, 3072, 2984, 1724, 1667, 1598, 1577, 1563, 1448, 1360, 1280, 1262 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{13}H_{12}NO^+$: 246.0753; found: 246.0766.

(4,5-Dimethylthiazol-2-yl)(phenyl)methanone (13a): Prepared according to the general procedure, using 4,5-dimethylthiazole (106 μL, 1 mmol), benzoyl chloride (230 μL, 2 equiv), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–Et_2O, 9:1) afforded **13a** as a colorless solid (166 mg, 76%); mp 90–91 °C (MeCN–Et_2O). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.42–8.425 (m, 2 H), 7.59 (tt, *J* = 7.3, 1.3 Hz, 1 H), 7.46–7.52 (m, 2 H), 2.46 (s, 3 H), 2.45 (s, 3 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 184.0 (C), 162.6 (C), 151.8 (C), 136.0 (C), 135.6 (C), 133.3 (CH), 131.1 (CH), 128.3 (CH), 15.2 (Me), 12.0 (Me). IR (neat): 3065, 2919, 2854, 1628, 1594, 1574, 1520, 1449, 1423, 1374, 1291, 1133 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{12}H_{12}NOS^+$: 218.0640; found: 218.0633.

Ethyl 2-Benzoyl-5-(4-methoxyphenyl)oxazole-4-carboxylate (14a): Prepared according to the general procedure, using ethyl 5-(4-methoxyphenyl)oxazole-4-carboxylate[16] (124 mg, 0.5 mmol), benzoyl chloride (120 μL, 2 equiv), Et_3N (210 μL, 3 equiv) and DMAP (18 mg, 30 mol%) in MeCN (1 mL). Purification by flash column chromatography (PE–EtOAc, 95:5) afforded **14a** as a colorless solid (91 mg, 52%); mp 119–120 °C (MeCN–Et_2O). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.49 (app d, *J* = 7.5 Hz, 2 H), 8.19 (app d, *J* = 9.0 Hz, 2 H), 7.65 (app t, *J* = 7.5 Hz, 1 H), 7.54 (app t, *J* = 7.5 Hz, 2 H), 7.00 (app d, *J* = 9.0 Hz, 2 H), 4.45 (q, *J* = 6.9 Hz, 2 H), 3.87 (s, 3 H), 1.42 (t, *J* = 6.9 Hz, 3 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 178.6 (C), 162.1 (C), 162.0 (C), 157.6 (C), 154.3 (C), 134.9 (C), 134.2 (CH), 131.1 (CH), 131.0 (CH), 128.7 (CH), 127.2 (C), 118.5 (C), 114.1 (CH), 61.7 (CH_2), 55.5 (Me), 14.4 (Me). IR (neat): 3067, 2974, 2933, 2841, 1713, 1655, 1607, 1596, 1579, 1565, 1504, 1170 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{20}H_{18}NO^+$: 352.1185; found: 352.1169.

4-{[(*tert*-Butyldimethylsilyl)oxy]methyl}-5-phenyloxazole (4k): To a mixture of (5-phenyloxazol-4-yl)methanol (200 mg, 1.14 mmol) in anhyd CH_2Cl_2 (4.2 mL) were added dropwise distilled 2,6-lutidine (330 μL, 2.85 mmol) and TBSOTf (400 μL, 1.71 mmol), and the reaction was stirred for 2.5 h at r.t. The mixture was diluted with sat. aq $NaHCO_3$ and extracted with CH_2Cl_2 (3 ×). The organic layers were washed with brine, dried over $MgSO_4$ and concentrated in vacuo. Purification by flash column chromatography (PE–EtOAc, 95:5) afforded **4k** as a colorless oil (302 mg, 92%). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 7.84 (s, 1 H), 7.75–7.78 (m, 2 H), 7.42–7.47 (m, 2 H), 7.33–7.39 (m, 1 H), 4.78 (s, 2 H), 0.91 (s, 9 H), 0.13 (s, 6 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 148.9 (CH), 148.6 (C), 134.4 (C), 128.8 (CH), 128.6 (CH), 128.2 (C), 126.4 (CH), 58.2 (CH_2), 26.0 (Me), 18.4 (C), –5.0 (Me). IR (neat): 2953, 2928, 2884, 2856, 1509, 1471, 1463, 1254, 1076, 1058 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{16}H_{24}NO_2Si^+$: 290.1576; found: 290.1568.

[4-{[(*tert*-Butyldimethylsilyl)oxy]methyl}-5-phenyloxazol-2-yl](phenyl)methanone (15a): Prepared according to the general procedure, using **4k** (146 mg, 0.5 mmol), benzoyl chloride (120 μL, 2 equiv), Et_3N (210 μL, 3 equiv) and DMAP (18 mg, 30 mol%) in MeCN (1 mL). Purification by flash column chromatography (PE–EtOAc, 95:5) afforded **15a** as a colorless solid (106 mg, 54%); mp 67–68 °C (Et_2O). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.51–8.54 (m, 2 H), 7.94–7.97 (m, 2 H), 7.65 (tt, *J* = 6.3, 1.2 Hz, 1 H), 7.42–7.56 (m, 5 H), 4.89 (s, 2 H), 0.94 (s, 9 H), 0.17 (s, 6 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 178.8 (C), 155.2 (C), 151.5 (C), 137.2 (C), 135.4 (C), 133.8 (CH), 131.0 (CH), 129.9 (CH), 129.0 (CH), 128.5 (CH), 127.3 (CH), 127.3 (C), 58.3 (CH_2), 26.0 (Me), 18.5 (C), –4.9 (Me). IR (neat): 3073, 3059, 2952, 2928, 2856, 1653, 1598, 1588, 1577, 1447, 1325, 1176 cm^{-1}. HRMS (ESI+): *m*/*z* calcd for $C_{23}H_{28}NO_3Si^+$: 394.1838; found: 394.1838.

Phenyl(5-phenyl-1,3,4-oxadiazol-2-yl)methanone (16a):[17] Prepared according to the general procedure, using 2-phenyl-1,3,4-oxadiazole[18] (146 mg, 1 mmol), benzoyl chloride (230 μL, 2 equiv), Et_3N (420 μL, 3 equiv) and DMAP (37 mg, 30 mol%) in MeCN (2 mL). Purification by flash column chromatography (PE–EtOAc, 85:15) afforded **16a** as a pale yellow oil (201 mg, 80%). ^{1}H NMR (300 MHz, $CDCl_3$): δ = 8.57–8.60 (m, 2 H), 8.22–8.26 (m, 2 H), 7.72 (tt, *J* = 7.4, 1.4 Hz, 1 H), 7.54–7.66 (m, 5 H). ^{13}C NMR (75 MHz, $CDCl_3$): δ = 177.6 (C), 166.0 (C), 161.0 (C), 134.9 (CH), 134.3 (C), 132.9 (CH), 131.0 (CH), 129.3 (CH), 128.9 (CH), 127.9 (CH), 122.9 (C).

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