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Synthesis of 1,2-Diaryl- and 1-Aryl-2-alkylimidazoles with Sterically Demanding Substituents

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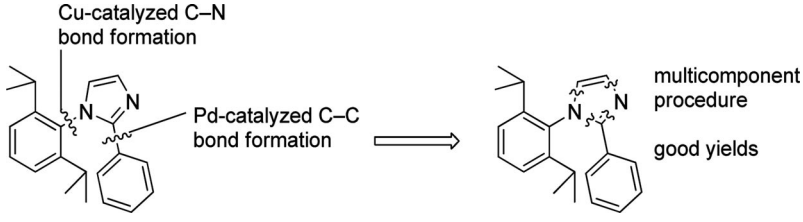
Keywords: Nitrogen heterocycles / Synthetic methods / Steric hindrance / Substituent effects / Photophysics

1,2-Diarylimidazoles are an important class of compounds. They are frequently used as ligands for photophysically active metal complexes and also display physiological activity. We developed a new, high-yielding procedure for the synthesis of 1,2-diaryl-substituted imidazoles with sterically demanding substituents at the respective *ortho* positions by starting from commercially available anilines and benzoic acids through the corresponding acid chlorides. The metal-free method provides access to a variety of different substituents on the phenyl rings at N-1 and C-2 as well as at the 4,5-positions of the imidazole backbone. Our new method is also suitable for the preparation of 1-aryl-2-alkylimidazoles.

Introduction

1,2-Diarylimidazoles are a class of compounds that are well known for their physiological effects, but they have recently received much attention as ligands for photophysically active metal complexes for organic light-emitting diodes (OLED), dye-sensitized solar cells (DSSC), and light-emitting electrochemical cells (LEC). Especially ligands with sterically demanding *ortho* substituents at the N-1 phenyl ring of the imidazole are of current interest. A recent Scifinder search of 1,2-diarylimidazoles with 2,6-disubstituted phenyl groups at N-1 led to 1184 hits. The majority of the hits (>900) led to patents that describe cyclometalated complexes of these imidazoles for applications as emitters in OLEDs. Many cyclometalated iridium complexes with 1,2-diarylimidazoles[1] have been reported, but cyclometalated complexes with 1-alkyl-2-arylimidazoles that contain platinum,[2] ruthenium[3] and other metals[4] are also known.

Imidazoles with aryl groups at the N-1 and C-2 positions also exhibit biological activity, for example, as antagonists of the cannabinoid CB1 receptor,[5] as serotonin antagonist reuptake inhibitors,[6] and as COX-2 inhibitors.[7] Initially, we set out to prepare 1-(2,6-diisopropylphenyl)-2-phenyl-1*H*-imidazole (see Scheme 1) as a ligand for a new class of platinum complexes. One approach to the desired product appeared to be a copper-catalyzed C–N bond formation between 2-phenylimidazole and a 2,6-diisopropylphenyl halide. However, the low reactivity of the starting materials for the coupling reaction (yields below 10%) and the expensive aryl halides made this pathway inconvenient. Alternatively, the product may be synthesized by a palladium-catalyzed arylation of 2-bromo-1-(2,6-diisopropylphenyl)-1*H*-imidazole. The bromination of the 1-(2,6-diisopropylphenyl)-1*H*-imidazole with *N*-bromosuccinimide to introduce a bromine atom at the C-2 position of the imidazole ring led to a complex reaction mixture, and we were unable to isolate the corresponding 2-bromoimidazole. Rossi reported a promising palladium-catalyzed and copper-mediated coupling reaction between 1-arylimidazoles and aryl iodides,



Scheme 1. Synthetic pathways to 1-(2,6-diisopropylphenyl)-2-phenyl-1*H*-imidazole.

but in our hands, this method did not work for the preparation of 1-(2,6-diisopropylphenyl)-2-phenyl-1*H*-imidazole.[8]

Because we were unable to prepare the desired imidazole through a transition-metal-catalyzed pathway, we looked for a different synthetic strategy. In the literature, one can find several one-pot procedures for the synthesis of imid-

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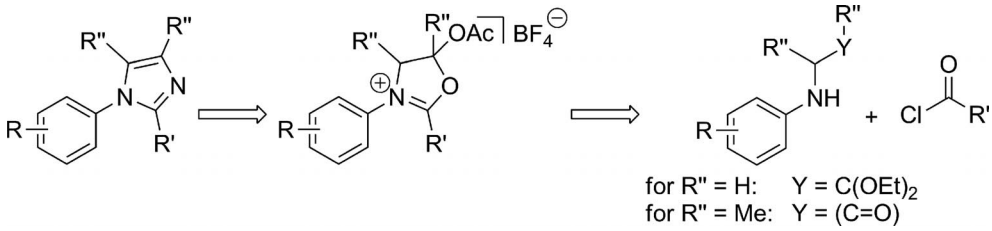


Scheme 2. Retrosynthetic route to 1,2-diarylimidazoles.

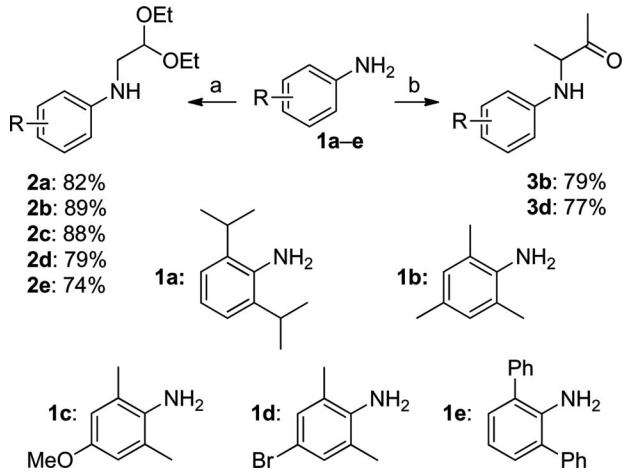
azoles with a 1,2-diarylimidazole core, such as the iodine-catalyzed[9] and $MgSO_4$-[10] or $FePO_4$-mediated[11] synthesis of 1,2,4,5-tetraarylimidazoles, the domino reaction of 2-azido acrylates and nitrones to 1,2,4,5-tetrasubstituted imidazoles,[12] the zinc-catalyzed synthesis of di- and trisubstituted imidazoles,[13] the cyclization of benzaldehyde, aniline, and a diketone,[1b] and the palladium-catalyzed synthesis of 1,2-disubstituted benzimidazoles.[14] However, none of these literature procedures were suitable for the preparation of 1-(2,6-diisopropylphenyl)-2-phenyl-1*H*-imidazole, as these methods were limited to the preparation of benzimidazoles or 4,5-disubstituted imidazoles.

We, therefore, looked for an alternative route to the synthesis of 1,2-diarylimidazoles with sterically demanding *ortho* substituents. On the basis of a previously reported method for the synthesis of unsymmetrically substituted imidazolium salts[15] we developed a new, flexible, and metal-free procedure to synthesize 1,2-diarylimidazoles with sterically demanding groups attached to the N-1 phenyl ring. Satisfactory yields resulted, even when the reaction was carried out on a gram scale.

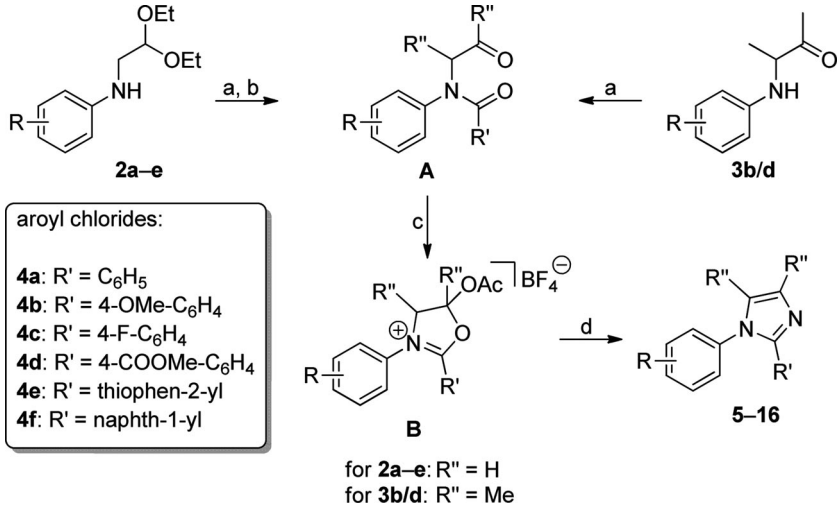
Results and Discussion

The retrosynthetic pathway is shown in Scheme 2. The 1,2-diarylimidazole can be obtained from an oxazolium salt by treatment with NH_4Cl and HBF_4, which in turn can be prepared from an alkylated aniline and a carboxylic acid. Because of the large number of commercially available anilines and carboxylic acids, this method allows for the preparation of a wide range of possible products.

Anilines **1a**–**1e** were treated with commercially available bromoacetaldehyde diethyl acetal to give the alkylated products **2a**–**2e** in high yields (see Scheme 3). The α-aminoketones **3b** and **3d** were obtained from an acid-catalyzed reaction between the corresponding aniline and commer-



Scheme 3. Syntheses of alkylated anilines. Reagents and conditions: (a) *n*BuLi, bromoacetaldehyde diethyl acetal, tetrahydrofuran (THF), room temp., (b) 2-hydroxybutanone, cat. HCl, toluene, reflux.



Scheme 4. Preparation of 1,2-diarylimidazoles. Reagents and conditions: (a) **4a**–**4f**, NEt_3, dichloromethane (DCM), room temp., (b) *para*-toluenesulfonic acid (*p*-TsOH), acetone/H_2O (9:1), reflux, (c) HBF_4 (aq.), acetic anhydride (Ac_2O), room temp., (d) NH_4OAc, HBF_4 (aq.), CH_3CN, room temp. to reflux.

cially available 2-hydroxybutanone in toluene along with the azeotropic removal of water.

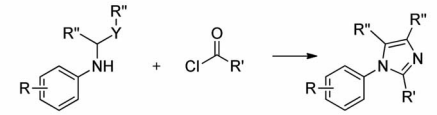
Compounds **2a**–**2e**, **3b**, and **3d** were treated with various aroyl chlorides. We used either commercially available aroyl chlorides or those prepared from their corresponding acids and thionyl chloride without purification (**4a**–**4f**, see Scheme 4). After removal of the solvent, the acetal group of **2a**–**2e** was cleaved by the addition of *para*-toluenesulfonic acid in acetone/water to obtain the corresponding aldehyde **A**. After aqueous workup, the crude product was dissolved in acetic anhydride. An aqueous solution of HBF_4 was added to convert aldehyde **A** into oxazolium salt **B** (see Scheme 4). Depending on the starting material, the backbone of the imidazole could be easily modified at the 4,5-position (R′′ groups). The addition of diethyl ether led to the precipitation of the oxazolium salt, which was removed by filtration and then washed with diethyl ether. Without further purification, oxazolium salt **B** was dissolved in acetonitrile, and NH_4OAc was added. To obtain a high conversion, the reaction mixture was stirred for 1 d, and then an aqueous solution of HBF_4 was added. The procedure was optimized to obtain high conversions at each step without the need to isolate each intermediate. The only chromatographic purification step that was required was at the end of the procedure. For all other reactions, the crude products were used. To validate the reaction pathway, we isolated and characterized through NMR and GC–MS analysis all the reported intermediates for the reaction of **2a** with **4a**.

We synthesized several 1,2-diarylimidazoles to prove the versatility of the new procedure (see Table 1). All reactions were carried out on a 10 mmol scale. The alkylated compounds **2a**–**2e**, **3b**, and **3d** underwent a reaction with acid chlorides **4a**–**4f** to give products in moderate to high yields (39–84%). The identities of the products were determined by ^1H and ^{13}C NMR spectroscopy and elemental analysis. The solid-state structure of imidazoles **6** and **10** were additionally confirmed by single-crystal X-ray structure analysis (see Figures 1 and 2). In the case of **2e**, we added a catalytic amount of *N*,*N*-dimethylaminopyridine (DMAP) to accelerate its reaction with **4a**.

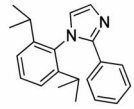
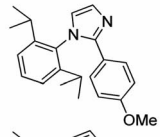
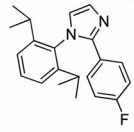
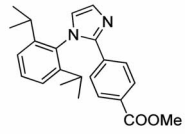
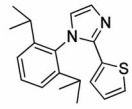
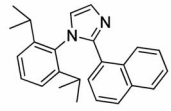
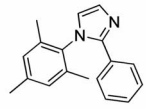
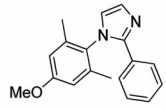
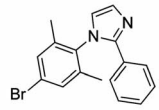
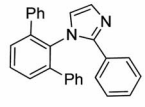
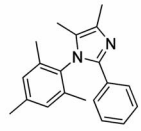
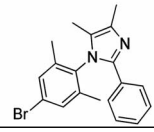
We were able to prepare imidazoles with different substituents at the 4-position of the phenyl group at C-2 such as the 4-methoxy and 4-fluoro groups (see Table 1, Entries 2 and 3, respectively) as well as imidazoles with substituted phenyl groups at N-1 such as the 2,6-diisopropylphenyl and 4-bromo-2,6-dimethylphenyl groups (see Table 1, Entries 1 and 9). While electron-withdrawing substituents on the phenyl group at C-2 decreased the yield only slightly, the yields of the imidazoles with very bulky groups at N-1 (i.e., 2,6-diphenylphenyl, see Table 1, Entry 10) or at C-2 (i.e., naphthyl, see Table 1, Entry 6) clearly decreased. With this new synthetic route, 4,5-disubstituted imidazoles were accessible (see Table 1, Entries 11 and 12), which could be synthesized in comparable yields to the corresponding unsubstituted imidazoles (see Table 1, Entries 7 and 9).

To demonstrate the high versatility of the procedure, we additionally prepared several 1-aryl-2-alkylimidazoles from **2b**. The reactions were carried out as described above with

Table 1. 1,2-Diarylimidazoles prepared as described in Scheme 4.



2a–e: R" = H; Y = $C(OEt)_2$ **3b/d:** R" = Me; Y = (C=O) **4a–f** **5–16**

Entry	Reactants	Product		Yield [%][a]
1	**2a** + **4a**		**5**	78
2	**2a** + **4b**		**6**	69
3	**2a**+ **4c**		**7**	76
4	**2a** + **4d**		**8**	51
5	**2a** + **4e**		**9**	60
6	**2a** + **4f**		**10**	47
7	**2b** + **4a**		**11**	78
8	**2c** + **4a**		**12**	82
9	**2d** + **4a**		**13**	79
10	**2e** + **4a**		**14**	39
11	**3b** + **4a**		**15**	76
12	**3d** + **4a**		**16**	84

[a] Isolated yield based on **2a**–**2e**, **3b**, and **3d**, respectively.

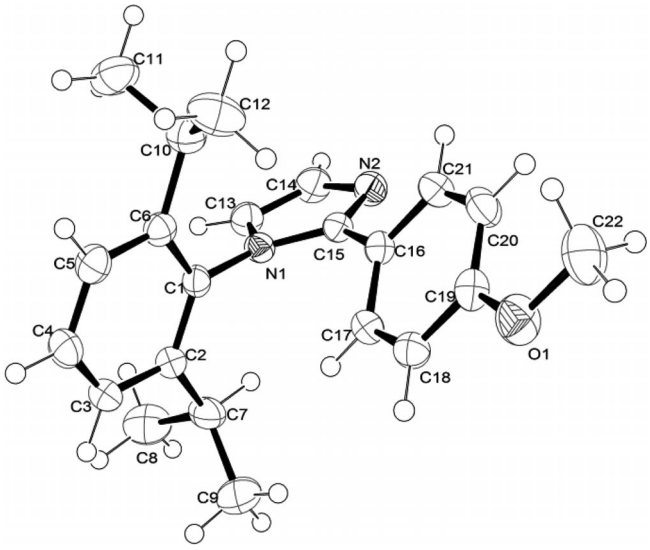


Figure 1. Solid-state structure of **6**. Thermal ellipsoids are drawn at the 50% probability level.

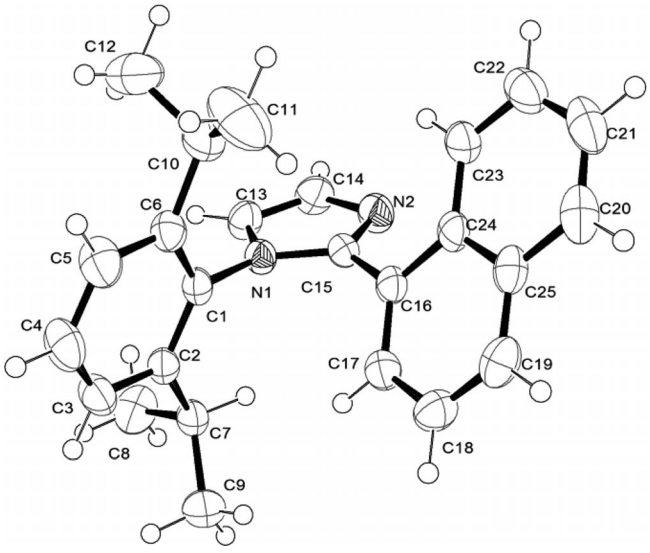
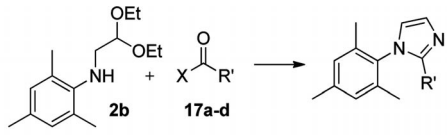


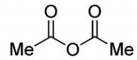
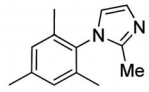
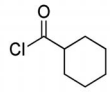
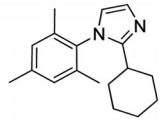
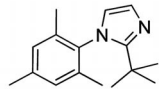
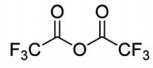
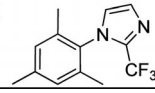
Figure 2. Solid-state structure of **10**. Thermal ellipsoids are drawn at the 50% probability level.

the activated alkyl carboxylic acid derivatives **17a**–**17d** (see Table 2). To demonstrate the versatility of the reaction, in some cases, we also used the corresponding anhydrides **17a** and **17d** instead of the acyl chlorides.

We were able to synthesize imidazoles with primary, secondary, and tertiary alkyl groups at the C-2 position (see Table 2, Entries 1–3) in yields of 54–66%. The yields of the 1-aryl-2-alkylimidazoles are generally lower than the 1,2-diarylimidazoles. We were also able to introduce a CF_3 group at the C-2 position (see Table 2, Entry 4), but we needed to modify the synthetic procedure. The corresponding oxazolium salt with the CF_3 group was highly stable, and, therefore, it was necessary to increase the temperature to 80 °C for the reaction of that oxazolium salt with NH_4OAc. After this modification, we obtained imidazole **21** in 64% yield. To best of our knowledge, this is the first

Table 2. 1-Aryl-2-alkylimidazoles prepared as described in Scheme 4.



Entry	Reactant **17**		Product		Yield [%][a]
1		**17a**		**18**	66
2		**17b**		**19**	54
3		**17c**		**20**	55
4		**17d**		**21**	64

[a] Isolated yield based on **2b**.

transition-metal-free synthesis of a 1-aryl-2-trifluoromethyl-1*H*-imidazole. Previous syntheses required stoichiometric amounts of a copper salt and a CF_3^+ precursor[16] or used 2-trifluoromethyl-1*H*-imidazole as the starting material of a copper-catalyzed coupling reaction.[17] Our procedure allows the synthesis of 1-aryl-2-trifluoromethyl-1*H*-imidazoles from inexpensive trifluoroacetic anhydride.

Conclusions

We describe a new, metal-free access to 1,2-diaryl- and 1-aryl-2-alkyl-substituted imidazoles with sterically demanding groups at the phenyl ring attached at the N-1 atom of the imidazole ring. All reactions were carried out on a gram scale and occurred in high yields. This method allows for the introduction of a wide range of substituents and groups at N-1 and C-2 by starting from commercially available and inexpensive anilines and carboxylic acids. We believe that this procedure will be very helpful for the preparation of new imidazoles. The synthetic pathway allows to easily fine tune the electronic structure and charge density of the C-2 phenyl group, which will be of interest for the synthesis of cyclometalated complexes. In addition, the tolerance of a halogen atom at the 4-position of the N-1 phenyl group (as in **13** and **16**) is of general interest, as it allows for further functionalization by palladium-catalyzed cross coupling reactions. We demonstrated the high versatility of this procedure by preparing a 1-aryl-2-trifluoromethyl-1*H*-imidazole for the first time through a transition-metal-free synthesis.

Experimental Section

General Methods: The NMR spectroscopic data were recorded with 300 (at 300.13, 75.45, and 282.40 MHz for ^{1}H, ^{13}C, and ^{19}F NMR, respectively) and 500 MHz (at 500.13 and 125.48 MHz for ^{1}H and ^{13}C NMR, respectively) spectrometers. The chemical shifts (δ) were measured in ppm with the solvent as the reference. The employed abbreviations are s (singlet), d (doublet), t (triplet), m (multiplet), dq (doublet of quintet), sept (septet), and br. s (broad singlet). Dry DCM and THF were obtained from an auto-solvent purification system. All other chemicals were used as received. Aniline **1e**,[18] *N*-alkylated anilines **2a**,[15] **2b**[15] and **3b**,[15] and aroyl chlorides **4b**[19] and **4d**[20] were prepared according to literature procedures. Acyl chlorides **4a**, **4c**, **4e**, and **17a**–**17d** were obtained from commercial sources. Aroyl chloride **4f** was prepared by treatment of 1-naphthoic acid with thionyl chloride (5 equiv.) in toluene and heating the resulting mixture at reflux for 4 h followed by removing the excess amount of thionyl chloride and toluene in vacuo.

4-Methoxy-2,6-dimethylaniline (1c): The synthesis was carried out in a similar manner to the literature procedure.[21] 4-Amino-3,4-dimethylphenol (3.11 g, 22 mmol) and potassium *tert*-butoxide (3.74 g, 33 mmol) were dissolved in *N*,*N*-dimethylformamide (DMF, 50 mL) under argon. At room temperature, a solution of methyl iodide (1.3 mL, 20 mmol) in DMF (10 mL) was added over a period of 6 h. After the addition was complete, the reaction mixture was stirred overnight at room temperature. DCM (150 mL) was added, and the combined organic layers were washed with KOH (1 M solution, 3 × 50 mL) and brine (10 mL) and then dried with $MgSO_4$. After filtration, the solvent was removed in vacuo. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 2:1) gave **1c** (2.03 g, 67%) as a red solid; m.p. 29 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 6.57 (s, 2 H), 3.75 (s, 3 H), 3.33 (br. s, 2 H, NH_2), 2.19 (s, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 152.0, 136.4, 123.2, 113.9, 55.7, 18.0 ppm. $C_9H_{13}NO$ (151.10): calcd. C 71.49, H 8.67, N 9.26; found C 71.55, H 8.71, N 9.17.

***N*-(2,2-Diethoxyethyl)-4-methoxy-2,6-dimethylaniline (2c):** *n*BuLi (1.6 M in hexane, 10.4 mL, 17 mmol) was added to a solution of **1c** (2.39 g, 16 mmol) in THF (60 mL) at 0 °C. Once the addition was complete, the mixture was stirred for 30 min at room temperature followed by addition of the bromoacetaldehyde diethyl acetal (2.8 mL, 17 mmol). The reaction mixture was stirred overnight at room temperature. Subsequently, the solution was poured into a mixture of saturated aqueous $NaHCO_3$/H_2O (1:1, 50 mL). The layers were separated, and the aqueous phase was extracted with ethyl acetate (2 × 80 mL). The combined organic layers were washed with brine (30 mL), dried with $MgSO_4$, and filtered. The solvent was removed in vacuo. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 3:1) gave **2c** (3.70 g, 88%) as a yellow oil. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 6.58 (s, 2 H), 4.60 (t, J = 5.5 Hz, 1 H), 3.71–3.77 (m, 5 H), 3.56 (dq, J = 7.1, 9.3 Hz, 2 H), 3.16 (br. s, 1 H, NH), 3.01 (d, J = 5.7 Hz, 2 H), 2.29 (s, 6 H), 1.25 (t, J = 7.1 Hz, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 154.6, 138.9, 131.4, 113.8, 101.9, 62.3, 55.3, 51.0, 18.5, 15.4 ppm. $C_{15}H_{25}NO_3$ (267.18): calcd. C 67.38, H 9.42, N 5.24; found C 67.57, H 9.63, N 5.47.

***N*-(2,2-Diethoxyethyl)-4-bromo-2,6-dimethylaniline (2d):** The synthesis of **2d** was carried out as described above for **2c** starting from 4-bromo-2,6-dimethylaniline (**1d**). Purification by column chromatography on silica gel (isohexane/ethyl acetate, 4:1) gave **2d** (3.76 g, 79%) as an orange oil. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.11 (s, 2 H), 4.54 (t, J = 5.5 Hz, 1 H), 3.72 (dq, J = 7.1, 9.3 Hz, 2 H), 3.54 (dq, J = 7.1, 9.3 Hz, 2 H), 3.41 (br. s, 1 H, NH), 3.09 (d, J = 5.4 Hz, 2 H), 2.26 (s, 6 H), 1.24 (t, J = 7.1 Hz, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 144.9, 131.2, 131.1, 113.8, 101.5, 62.3, 50.2, 18.3, 15.4 ppm. $C_{14}H_{22}BrNO_2$ (315.08): calcd. C 53.17, H 7.01, N 4.43; found C 53.39, H 7.23, N 4.64.

***N*-(2,2-Diethoxyethyl)-2,6-diphenylaniline (2e):** *n*BuLi (1.6 M in hexane, 11.1 mL, 17.8 mmol) was added to a solution of **1e** (3.96 g, 16.2 mmol) in THF (80 mL) at 0 °C. Once the addition was complete, the mixture was stirred for 30 min at room temperature followed by addition of the bromoacetaldehyde diethyl acetal (11.5 mL, 80.8 mmol). The reaction mixture was stirred overnight at 60 °C. Subsequently, the solution was poured into a mixture of saturated aqueous $NaHCO_3$/H_2O (1:1, 50 mL). The layers were separated, and the aqueous phase was extracted with ethyl acetate (2 × 80 mL). The combined organic layers were washed with brine (30 mL), dried with $MgSO_4$, and filtered. The solvent and the excess amount of bromoacetaldehyde diethyl acetal were removed in vacuo. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 19:1) gave **2e** (4.32 g, 74%) as a yellow oil. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.54 (d, J = 7.2 Hz, 4 H), 7.44 (t, J = 7.7 Hz, 4 H), 7.35 (t, J = 7.4 Hz, 2 H), 7.19 (d, J = 7.6 Hz, 2 H), 7.02 (t, J = 7.6 Hz, 1 H), 4.10 (t, J = 5.7 Hz, 1 H), 3.14 (dq, J = 7.1, 9.3 Hz, 2 H), 2.57 (d, J = 5.7 Hz, 2 H), 0.93 (t, J = 6.9 Hz, 6 H) ppm. The NH signal was not detected. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 140.5, 132.7, 130.5, 129.1, 128.6, 127.1, 101.3, 62.09, 50.0, 15.0 ppm. Two signals are missing, probably because of overlapping. $C_{24}H_{27}NO_2$ (361.48): calcd. C 79.74, H 7.53, N 3.87; found C 79.75, H 7.38, N 3.96.

3-[(4-Bromo-2,6-dimethylphenyl)amino]butan-2-one (3d): 4-Bromo-2,6-dimethylaniline (**1d**, 4.00 g, 20 mmol), 3-hydroxybutan-2-one (3.71 g, 40 mmol), toluene (70 mL), and concentrated HCl (two drops) were combined, and the reaction mixture was stirred and heated at reflux for 4 h along with the azeotropic removal of water by using a Dean–Stark trap. Additional 3-hydroxybutan-2-one (1.86 g, 20 mmol) was added, and the mixture was stirred and heated at reflux for an additional 2 h. The mixture was cooled to room temperature, and the solvent was removed in vacuo. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 4:1) gave **3d** (4.16 g, 77%) as a yellow oil. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.11 (s, 2 H), 4.07–4.09 (m, 2 H, NH, CH), 2.26 (s, 6 H), 2.21 (s, 3 H), 1.22 (d, J = 6.6 Hz, 3 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 209.4, 143.3, 131.3, 131.0, 113.7, 60.8, 27.4, 18.8, 18.3 ppm. $C_{12}H_{16}BrNO$ (269.04): calcd. C 53.35, H 5.97, N 5.18; found C 53.51, H 6.17, N 5.08.

General Procedure for the Synthesis of the Imidazoles from 2a–2e, 3b, and 3d

Step I (2/3 → A): Under argon, triethylamine (2.8 mL, 20 mmol) and acyl chloride **4a**–**4f** (50 mmol) were added to a solution of compound **2a**–**2e**, **3b**, or **3d** (10 mmol) in DCM (20 mL) at 0 °C. Then, the reaction was stirred overnight at room temperature, and the solvent was removed in vacuo. The products of **2a**–**2e** were dissolved in acetone/water (9:1, 20 mL). *para*-Toluenesulfonic acid (3.62 g, 21 mmol) was added, and the solution was stirred and heated at reflux for 2 h. Subsequently, the solvent was removed in vacuo. All residues were dissolved in EtOAc (80 mL), and the resulting solution was washed with a saturated Na_2CO_3 solution (80 mL). The aqueous phase was extracted with EtOAc (3 × 80 mL). The combined organic layers were washed with brine (10 mL) and dried with $MgSO_4$. After filtration, the solvent was removed in vacuo.

Step II (A → B): The product of step I was dissolved in acetic anhydride (15 mL), and the reaction mixture was cooled to 0 °C. An aqueous solution of HBF_4 (50%, 1.5 mL, 12 mmol) was added slowly. Then, the reaction mixture was stirred overnight at room

temperature. Diethyl ether (100 mL) was added to precipitate oxazolium salt **B**. The solid was filtered and washed with diethyl ether (2× 10 mL).

Step III (B → Imidazole): The product of step II was dissolved in acetonitrile (30 mL). NH_4OAc (1.32 g, 17 mmol) was added, and the solution was stirred at room temperature for 1 d. Then, an aqueous solution of HBF_4 (50%, 2.1 mL, 17 mmol) was added. The reaction mixture was stirred at 80 °C overnight. Subsequently, the solvent was removed in vacuo, and the residue was dissolved in EtOAc (80 mL). The resulting solution was washed with a saturated Na_2CO_3 solution (80 mL). The aqueous phase was extracted with EtOAc (3× 80 mL). The combined organic layers were washed with brine (10 mL) and dried with $MgSO_4$. After filtration, the solvent was removed, and the crude product was purified by column chromatography on silica gel.

1-(2,6-Diisopropylphenyl)-2-phenyl-1*H*-imidazole (5): Imidazole **5** was obtained from **2a** and **4a** by following the general procedure. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 2:1) gave **5** (2.37 g, 78%) as a pale yellow solid; m.p. 89 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.47 (t, J = 7.8 Hz, 1 H), 7.41–7.43 (m, 2 H), 7.32 (d, J = 1.3 Hz, 1 H), 7.26 (d, J = 7.9 Hz, 2 H), 7.17–7.22 (m, 3 H), 6.94 (d, J = 1.3 Hz, 1 H), 2.47 (sept, J = 6.9 Hz, 2 H), 1.11 (d, J = 6.6 Hz, 6 H), 0.90 (d, J = 6.9 Hz, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 147.0, 145.9, 134.2, 130.3, 129.8, 128.9, 128.13, 128.11, 127.1, 124.3, 123.5, 28.1, 25.1, 22.7 ppm. $C_{21}H_{24}N_2$ (304.19): calcd. C 82.85, H 7.95, N 9.20; found C 82.94, H 8.12, N 9.35.

1-(2,6-Diisopropylphenyl)-2-(4-methoxyphenyl)-1*H*-imidazole (6): Imidazole **6** was obtained from **2a** and **4b** by following the general procedure. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 2:1) followed by recrystallization from ethyl acetate gave **6** (2.29 g, 69%) as a pale yellow solid; m.p. 92 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.46 (t, J = 7.7 Hz, 1 H), 7.34 (d, J = 9.1 Hz, 2 H), 7.27 (d, J = 0.6 Hz, 1 H), 7.26 (d, J = 7.9 Hz, 2 H), 6.90 (d, J = 1.3 Hz, 1 H), 6.72 (d, J = 8.8 Hz, 2 H), 3.75 (s, 3 H), 2.48 (sept, J = 6.8 Hz, 2 H), 1.11 (d, J = 6.9 Hz, 6 H), 0.91 (d, J = 6.9 Hz, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 159.4, 147.0, 146.0, 134.4, 129.8, 128.6, 128.4, 124.3, 123.2, 123.1, 113.5, 55.1, 28.1, 25.0, 22.8 ppm. $C_{22}H_{26}N_2O$ (334.20): calcd. C 79.00, H 7.84, N 8.38; found C 78.70, H 7.66, N 8.17. Single crystals were obtained by slow evaporation of the ethyl acetate solution.

1-(2,6-Diisopropylphenyl)-2-(4-fluorophenyl)-1*H*-imidazole (7): Imidazole **7** was obtained from **2a** and **4c** by following the general procedure. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 3:1) gave **7** (2.44 g, 76%) as a yellow oil. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.48 (t, J = 7.7 Hz, 1 H), 7.38–7.41 (m, 2 H), 7.31 (d, J = 0.6 Hz, 1 H), 7.27 (d, J = 7.9 Hz, 2 H), 6.94 (d, J = 0.6 Hz, 1 H), 6.87–6.91 (m, 2 H), 2.45 (sept, J = 6.8 Hz, 2 H), 1.11 (d, J = 6.9 Hz, 6 H), 0.91 (d, J = 6.9 Hz, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 162.6 (d, J = 249.5 Hz), 146.1, 145.9, 134.0, 130.0, 129.0 (d, J = 8.5 Hz), 128.8, 126.51, 124.4, 123.6, 115.2 (d, J = 22.0 Hz), 28.1, 25.1, 22.7 ppm. ^{19}F NMR (282.4 MHz, $CDCl_3$): δ = –112.90 ppm. $C_{21}H_{23}FN_2$ (322.18): calcd. C 78.23, H 7.19, N 8.69; found C 78.32, H 7.31, N 8.84.

Methyl 4-[1-(2,6-Diisopropylphenyl)-1*H*-imidazol-2-yl]benzoate (8): Imidazole **8** was obtained from **2a** and **4d** by following the general procedure. Purification by column chromatography on silica gel (DCM/ethyl acetate, 7:1) gave **8** (1.85 g, 51%) as a colorless solid; m.p. 135 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.87 (d, J = 8.8 Hz, 2 H), 7.47–7.51 (m, 3 H), 7.36 (d, J = 1.3 Hz, 1 H), 7.28 (d, J = 7.5 Hz, 2 H), 6.99 (d, J = 1.0 Hz, 1 H), 3.87 (s, 3 H), 2.43 (sept, J = 6.9 Hz, 2 H), 1.11 (d, J = 6.9 Hz, 6 H), 0.90 (d, J = 6.9 Hz, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 166.6, 145.8, 134.4, 134.0, 130.2, 129.5, 129.5, 129.3, 126.7, 124.5, 124.4, 52.1, 28.2, 25.1, 22.8 ppm. $C_{23}H_{26}N_2O_2$ (362.47): calcd. C 76.21, H 7.23, N 7.73; found C 76.47, H 7.35, N 7.81.

1-(2,6-Diisopropylphenyl)-2-thiophen-2-yl-1*H*-imidazole (9): Imidazole **9** was obtained from **2a** and **4e** by following the general procedure. Purification by column chromatography on silica gel (DCM/ethyl acetate, 19:1) gave **9** (1.86 g, 60%) as a pale yellow solid; m.p. 110 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.52 (t, J = 7.7 Hz, 1 H), 7.31 (d, J = 7.9 Hz, 2 H), 7.28 (d, J = 1.0 Hz, 1 H), 7.16 (d, J = 5.0 Hz, 1 H), 6.92 (d, J = 1.0 Hz, 1 H), 6.81 (t, J = 5.0 Hz, 1 H), 6.59 (br. s, 1 H), 2.44 (sept, J = 6.9 Hz, 2 H), 1.12 (d, J = 6.9 Hz, 6 H), 0.97 (d, J = 6.9 Hz, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 146.6, 143.0, 133.3, 132.8, 130.3, 129.0, 127.2, 126.1, 125.1, 124.4, 122.6, 28.2, 25.0, 22.8 ppm. $C_{19}H_{22}N_2S$ (310.15): calcd. C 73.51, H 7.14, N 9.02, S 10.33; found C 73.36, H 7.28, N 9.00, S 10.37.

1-(2,6-Diisopropylphenyl)-2-(naphthalen-1-yl)-1*H*-imidazole (10): Imidazole **10** was obtained from **2a** and **4f** by following the general procedure. Purification by column chromatography on silica gel (DCM/ethyl acetate, 19:1) gave **10** (1.67 g, 47%) as a pale yellow solid; m.p. 97 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 8.52 (d, J = 8.2 Hz, 1 H), 7.80 (dd, J = 8.2, 1.3 Hz, 1 H), 7.74 (d, J = 8.2 Hz, 1 H), 7.55 (ddd, J = 8.4, 6.9, 1.4 Hz, 1 H), 7.49 (d, J = 1.3 Hz, 1 H), 7.48 (ddd, J = 8.1, 6.8, 1.3 Hz, 1 H), 7.31 (t, J = 8.2 Hz, 1 H), 7.17 (dd, J = 8.2, 7.3 Hz, 1 H), 7.11 (d, J = 7.9 Hz, 2 H), 7.09 (d, J = 1.3 Hz, 1 H), 7.03 (d, J = 7.3 Hz, 1 H), 2.55 (sept, J = 6.7 Hz, 2 H), 1.11 (d, J = 6.9 Hz, 6 H), 0.70 (d, J = 6.9 Hz, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 146.5, 146.1, 133.8, 133.3, 129.4, 132.4, 129.2, 128.5, 128.0, 127.6, 126.9, 126.9, 126.2, 125.9, 124.0, 123.8, 123.0, 28.1, 25.8, 22.3 ppm. $C_{25}H_{26}N_2$ (345.21): calcd. C 84.71, H 7.39, N 7.90; found C 84.50, H 7.26, N 7.96. Single crystals were obtained by slow evaporation of the ethyl acetate solution.

1-(2,4,6-Trimethylphenyl)-2-phenyl-1*H*-imidazole (11): Imidazole **11** was obtained from **2b** and **4a** by following the general procedure. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 1:1) gave **11** (2.05 g, 78%) as a pale yellow solid; m.p. 85 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.41–7.43 (m, 2 H), 7.32 (d, J = 1.0 Hz, 1 H), 7.21–7.25 (m, 3 H), 6.96 (d, J = 0.6 Hz, 2 H), 6.89 (d, J = 1.3 Hz, 1 H), 2.36 (s, 3 H), 1.93 (s, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 146.3, 138.8, 135.2, 134.6, 130.6, 129.32, 129.25, 128.3, 128.2, 126.7, 121.9, 21.1, 17.6 ppm. $C_{18}H_{18}N_2$ (262.15): calcd. C 82.41, H 6.92, N 10.68; found C 82.60, H 6.63, N 10.59.

1-(4-Methoxy-2,6-dimethylphenyl)-2-phenyl-1*H*-imidazole (12): Imidazole **12** was obtained from **2c** and **4a** by following the general procedure. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 1:2) gave **12** (2.27 g, 82%) as a pale yellow solid; m.p. 126 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.41–7.43 (m, 2 H), 7.31 (d, J = 1.3 Hz, 1 H), 7.21–7.25 (m, 3 H), 6.89 (d, J = 1.3 Hz, 1 H), 6.67 (s, 2 H), 3.83 (s, 3 H), 1.94 (s, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 159.3, 146.5, 136.9, 130.7, 130.1, 129.3, 128.3, 128.1, 126.7, 122.2, 113.6, 55.3, 18.0 ppm. $C_{18}H_{18}N_2O$ (278.14): calcd. C 77.67, H 6.52, N 10.06; found C 77.90, H 6.62, N 10.12.

1-(4-Bromo-2,6-dimethylphenyl)-2-phenyl-1*H*-imidazole (13): Imidazole **13** was obtained from **2d** and **4a** by following the general procedure. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 1:2) gave **13** (2.59 g, 79%) as a colorless solid; m.p. 119 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.38–7.40 (m, 2 H), 7.33 (d, J = 1.3 Hz, 1 H), 7.32 (s, 2 H), 7.25–7.28 (m, 3 H), 6.88 (d, J = 1.3 Hz, 1 H), 1.95 (s, 6 H) ppm. ^{13}C NMR (125 MHz,

$CDCl_3$): δ = 146.3, 137.7, 136.3, 131.5, 130.2, 129.8, 128.51, 128.47, 126.7, 122.6, 121.5, 17.6 ppm. $C_{17}H_{15}BrN_2$ (326.04): calcd. C 62.40, H 4.62, N 8.56; found C 62.47, H 4.61, N 8.56.

1-(2,6-Diphenylphenyl)-2-phenyl-1*H*-imidazole (14): Imidazole **14** was obtained from **2e** and **4a** by following a modified procedure: Under argon, triethylamine (2.8 mL, 20 mmol) and benzoyl chloride **4a** (5.8 mL, 50 mmol) were added to a solution of **2e** (10 mmol) and DMAP (122 mg, 1 mmol) in DCM (20 mL) at 0 °C. The reaction was stirred overnight at room temperature. The solvent was removed in vacuo and the residue dissolved in acetone/water (9:1, 20 mL). *para*-Toluenesulfonic acid (3.62 g, 21 mmol) was added, and the solution was stirred and heated at reflux for 2 h. Subsequently, the solvent was removed in vacuo. The residue was dissolved in EtOAc (80 mL), and the solution was washed with a saturated Na_2CO_3 solution (80 mL). The aqueous phase was extracted with DCM (3 × 80 mL). The combined organic layers were washed with brine (10 mL) and dried with $MgSO_4$. After filtration, the solvent was removed in vacuo. Subsequently, steps II and III were carried out without further modifications. Purification by column chromatography on silica gel (DCM/ethyl acetate, 6:1) gave **14** (1.46 g, 39%) as a pale brown solid; m.p. 179 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.59 (t, J = 7.3 Hz, 1 H), 7.47 (d, J = 7.6 Hz, 2 H), 7.18–7.23 (m, 3 H), 7.13–7.18 (m, 4 H), 7.09 (t, J = 7.7 Hz, 2 H), 7.03–7.05 (m, 2 H), 6.98 (d, J = 1.3 Hz, 1 H), 6.87–6.92 (m, 4 H), 6.69 (d, J = 1.3 Hz, 1 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 147.0, 139.6, 138.0, 133.6, 130.6, 130.4, 129.2, 128.8, 128.2, 128.1, 127.8, 127.8, 127.3, 127.0, 123.4 ppm. $C_{27}H_{20}N_2$ (372.16): calcd. C 87.07, H 5.41, N 7.52; found C 86.93, H 5.52, N 7.56.

4,5-Dimethyl-2-phenyl-1-(2,4,6-trimethylphenyl)-1*H*-imidazole (15): Imidazole **15** was obtained from **3b** and **4a** by following a modified procedure. Under argon, triethylamine (2.8 mL, 20 mmol) and benzoyl chloride **4a** (5.8 mL, 50 mmol) were added to a solution of **3b** (2.05 g, 10 mmol) in DCM (20 mL) at 0 °C. The reaction was stirred overnight at room temperature. The reaction mixture was washed with a saturated Na_2CO_3 solution (80 mL). The aqueous phase was extracted with DCM (3 × 80 mL). The combined organic layers were washed with brine (10 mL) and dried with $MgSO_4$. After filtration, the solvent was removed in vacuo. The residue was dissolved in acetic anhydride (15 mL), and the solution was cooled to 0 °C. An aqueous solution of HBF_4 (50%, 1.5 mL, 12 mmol) was slowly added. Afterwards, the reaction was stirred overnight at room temperature. Diethyl ether (100 mL) was added, which resulted in the separation of an oil. The supernatant organic phase was removed by decantation, and the residue was dried in vacuo. Subsequently, step III was carried out without further modifications. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 1:2) gave **15** (2.21 g, 76%) as a pale yellow solid; m.p. 63 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.37–7.39 (m, 2 H), 7.16–7.17 (m, 3 H), 6.97 (s, 2 H), 2.35 (s, 3 H), 2.31 (s, 3 H), 1.90 (s, 6 H), 1.86 (s, 3 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 143.7, 138.6, 135.8, 134.0, 133.7, 131.1, 129.3, 128.1, 127.5, 126.3, 124.1, 21.1, 17.6, 13.0, 8.7 ppm. $C_{20}H_{22}N_2$ (290.18): calcd. C 82.72, H 7.64, N 9.65; found C 82.56, H 7.66, N 9.44.

1-(4-Bromo-2,6-dimethylphenyl)-4,5-dimethyl-2-phenyl-1*H*-imidazole (16): Imidazole **16** was obtained from **3d** and **4a** by following a modified procedure. Under argon, triethylamine (2.8 mL, 20 mmol) and benzoyl chloride **4a** (5.8 mL, 50 mmol) were added to a solution of **3d** (2.70 g, 10 mmol) in DCM (20 mL) at 0 °C. Afterwards, the reaction was stirred overnight at room temperature. The reaction mixture was washed with a saturated Na_2CO_3 solution (80 mL), and the aqueous phase was extracted with DCM (3 × 80 mL). The combined organic layers were washed with brine (10 mL) and dried with $MgSO_4$. After filtration, the solvent was removed in vacuo. The residue was dissolved in acetic anhydride (15 mL), and the solution was cooled to 0 °C. An aqueous solution of HBF_4 (50%, 1.5 mL, 12 mmol) was slowly added. Afterwards, the reaction was stirred overnight at room temperature. Diethyl ether (100 mL) was added, which resulted in the separation of an oil. The supernatant organic phase was removed by decantation, and the residue was dried in vacuo. Subsequently, step III was carried out without further modifications. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 1:2) gave **16** (2.97 g, 84%) as a colorless solid; m.p. 122 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.34–7.36 (m, 2 H), 7.33 (s, 2 H), 7.19–7.21 (m, 3 H), 2.31 (s, 3 H), 1.92 (s, 6 H), 1.86 (s, 3 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 143.8, 138.4, 135.5, 134.5, 131.5, 130.8, 128.3, 127.8, 126.3, 123.7, 122.5, 17.6, 12.9, 8.7 ppm. $C_{19}H_{19}BrN_2$ (354.07): calcd. C 64.23, H 5.39, N 7.89; found C 64.17, H 5.34, N 7.77.

2-Methyl-1-(2,4,6-trimethylphenyl)-1*H*-imidazole (18): Imidazole **18** was obtained from **2b** and **17a** by following the general procedure. Purification by column chromatography on silica gel (ethyl acetate) gave **18** (1.32 g, 66%) as a pale brown solid; m.p. 57 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.08 (s, 1 H), 6.96 (s, 2 H), 6.75 (s, 1 H), 2.33 (s, 3 H), 2.10 (s, 3 H), 1.92 (s, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 144.8, 138.7, 135.5, 133.4, 129.0, 128.0, 119.5, 21.0, 17.3, 12.7 ppm. $C_{13}H_{16}N_2$ (200.13): calcd. C 77.96, H 8.05, N 13.99; found C 78.29, H 7.96, N 13.76.

2-Cyclohexyl-1-(2,4,6-trimethylphenyl)-1*H*-imidazole (19): Imidazole **19** was obtained from **2b** and **17b** by following the general procedure. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 1:9) gave **19** (1.45 g, 54%) as a pale brown solid; m.p. 62 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.14 (d, J = 1.3 Hz, 1 H), 6.98 (s, 2 H), 6.69 (d, J = 1.3 Hz, 1 H), 2.36 (s, 3 H), 2.13–2.19 (m, 1 H), 1.95 (s, 6 H), 1.67–1.76 (m, 6 H), 1.60–1.65 (m, 1 H), 1.21–1.29 (m, 1 H), 1.08–1.17 (m, 2 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 152.7, 138.5, 135.5, 133.3, 129.1, 128.1, 118.9, 35.8, 32.0, 26.2, 25.7, 21.1, 17.4 ppm. $C_{18}H_{24}N_2$ (268.19): calcd. C 80.55, H 9.01, N 10.44; found C 80.20, H 9.25, N 10.25.

2-(1,1-Dimethylethyl)-1-(2,4,6-trimethylphenyl)-1*H*-imidazole (20): Imidazole **20** was obtained from **2b** and **17c** by following the general procedure. Purification by column chromatography on silica gel (DCM/ethyl acetate, 1:1) gave **20** (1.32 g, 55%) as a pale brown solid; m.p. 66 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.09 (d, J = 1.3 Hz, 1 H), 6.94 (s, 2 H), 6.61 (d, J = 1.3 Hz, 1 H), 2.34 (s, 3 H), 1.99 (s, 6 H), 1.21 (s, 9 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 154.1, 138.5, 135.9, 135.8, 128.9, 127.1, 121.4, 34.3, 29.7, 21.0, 17.8 ppm. $C_{16}H_{22}N_2$ (242.18): calcd. C 79.29, H 9.15, N 11.56; found C 79.12, H 9.46, N 11.51.

2-(Trifluoromethyl)-1-(2,4,6-trimethylphenyl)-1*H*-imidazole (21): Imidazole **21** was obtained from **2b** and **17d**. Under argon, triethylamine (2.8 mL, 20 mmol) and **17d** (7.0 mL, 50 mmol) were added to a solution of **2b** (2.51 g, 10 mmol) in DCM (20 mL) at 0 °C. Then, the reaction was stirred overnight at room temperature. The solvent was removed in vacuo, and the residue dissolved in acetone/water (9:1, 20 mL). *para*-Toluenesulfonic acid (3.62 g, 21 mmol) was added, and the solution was stirred and heated at reflux for 2 h. Subsequently, the solvent was removed in vacuo. The residue was dissolved in EtOAc (80 mL), and the solution was washed with a saturated Na_2CO_3 solution (80 mL). The aqueous phase was extracted with EtOAc (3 × 80 mL). The combined organic layers were washed with brine (10 mL), dried with $MgSO_4$, and filtered. The solvent was removed in vacuo. The residue was dissolved in acetic anhydride (15 mL), and the reaction mixture was cooled to 0 °C.

An aqueous solution of HBF_4 (50%, 1.5 mL, 12 mmol) was added slowly. Then, the reaction was stirred overnight at room temperature. Subsequently, the solvent was removed in vacuo. Crystallization was initiated by cooling the flask with liquid nitrogen. The solid was washed with cool (0 °C) diethyl ether (3× 10 mL) and then dried in vacuo. The filtrate was stored at –8 °C overnight, which resulted in the precipitation of additional oxazolium salt. The precipitate was filtered and washed with cool diethyl ether (2× 5 mL). The combined solids were dissolved in acetonitrile (30 mL). NH_4OAc (1.32 g, 17 mmol) was added, and the mixture was stirred at 80 °C for 1 d. Then, an aqueous solution of HBF_4 (50%, 2.1 mL, 17 mmol) was added. The reaction was stirred at 80 °C overnight. Subsequently, the solvent was removed in vacuo, and the residue was dissolved in EtOAc (80 mL). The solution was washed with a saturated Na_2CO_3 solution (80 mL). The aqueous phase was extracted with EtOAc (3× 80 mL). The combined organic layers were washed with brine (10 mL), dried with $MgSO_4$, and filtered, and the solvent was removed in vacuo. Purification by column chromatography on silica gel (isohexane/ethyl acetate, 4:1) gave **21** (1.62 g, 64%) as a pale yellow solid; m.p. 80 °C. ^{1}H NMR (500 MHz, $CDCl_3$): δ = 7.31 (d, J = 1.3 Hz, 1 H), 6.98 (s, 2 H), 6.96 (d, J = 1.0 Hz, 1 H), 2.35 (s, 3 H), 1.96 (s, 6 H) ppm. ^{13}C NMR (125 MHz, $CDCl_3$): δ = 139.7, 136.0 (d, J = 38.7 Hz), 135.5, 131.9, 129.4, 129.0, 124.0, 118.6 (d, J = 270.1 Hz), 21.1, 17.0 ppm. ^{19}F NMR (282.4 MHz, $CDCl_3$): δ = –62.74 ppm. $C_{13}H_{13}F_3N_2$ (254.10): calcd. C 61.41, H 5.15, N 11.02; found C 61.07, H 5.39, N 10.85.

Intermediates A and B: In general, we did not isolate intermediates **A** and **B**. The crude products were used directly in the next reaction steps, but to confirm their identity, we isolated and characterized them from the reaction of *N*-(2,2-diethoxyethyl)-2,6-diisopropylaniline (**2a**) with benzoyl chloride **4a**. The synthesis and experimental data of the corresponding intermediates are described below.

***N*-(2,6-Diisopropylphenyl)-*N*-(2-oxoethyl)benzamide (Example for Intermediate A):** Under argon, triethylamine (0.2 mL, 1.4 mmol) and **4a** (0.2 mL, 1.4 mmol) were added to a solution of **2a** (200 mg, 0.7 mmol) in DCM (5 mL) at 0 °C. Afterwards, the reaction was stirred overnight at room temperature. The solvent was removed in vacuo, and the residue was dissolved in acetone/water (9:1, 5 mL). *p*-Toluenesulfonic acid (246 mg, 1.4 mmol) was added, and the solution was stirred and heated at reflux for 2 h. Subsequently, the solvent was removed in vacuo. The residue was dissolved in DCM (10 mL), and the solution was washed with a saturated Na_2CO_3 solution (10 mL). The aqueous phase was extracted with DCM (3× 10 mL). The combined organic layers were washed with brine (5 mL), dried with $MgSO_4$, and filtered, and the solvent was removed in vacuo. Purification by column chromatography on silica gel (petroleum ether/ethyl acetate, 3:1) gave intermediate **A** (186 mg, 84%) as a pale yellow solid. ^{1}H NMR (300 MHz, $CDCl_3$): δ = 9.87 (t, J = 1.4 Hz, 1 H), 7.20–7.30 (m, 4 H), 7.06–7.13 (m, 4 H), 4.18 (d, J = 1.3 Hz, 2 H), 3.16 (quin, J = 6.8 Hz, 2 H), 1.14 (d, J = 6.8 Hz), 0.94 (d, J = 6.8 Hz, 6 H) ppm. ^{13}C NMR (75 MHz, $CDCl_3$): δ = 196.6, 170.9, 145.7, 138.5, 133.4, 130.7, 129.4, 129.0, 127.6, 124.9, 61.7, 28.3, 25.4, 22.8 ppm. GC–MS: *m/z* (%) = 323 (1) $[M]^+$, 295 (15), 280 (9), 146 (8), 105 (100), 77 (37).

5-Acetoxy-3-(2,6-diisopropylphenyl)-2-phenyl-4,5-dihydrooxazol-3-ium Tetrafluoroborate (Example for Intermediate B): *N*-(2,6-Diisopropylphenyl)-*N*-(2-oxoethyl)benzamide (152 mg, 0.5 mmol) was dissolved in acetic anhydride (3 mL), and the solution was cooled to 0 °C. An aqueous solution of HBF_4 (50% aq. 0.07 mL, 0.5 mmol) was slowly added. Afterwards, the reaction was stirred overnight at room temperature. Diethyl ether (5 mL) was added to precipitate the oxazolium salt. The solid was separated by filtration and washed with diethyl ether (2× 3 mL) to give intermediate **B** (186 mg, 87%) as a colorless solid. ^{1}H NMR (300 MHz, $CDCl_3$): δ = 7.87–7.92 (m, 1 H), 7.57–7.71 (m, 6 H), 7.42–7.50 (m, 2 H), 5.02 (dd, J = 7.0, 14.2 Hz, 1 H), 4.60 (dd, J = 2.7, 14.1 Hz, 1 H), 3.26 (quin, J = 6.6 Hz, 1 H), 2.70 (quin, J = 6.7 Hz, 1 H), 1.26 (dd, J = 3.0, 6.6 Hz, 6 H), 1.09 (d, J = 6.6 Hz, 3 H), 0.73 (d, J = 6.8 Hz, 3 H) ppm. ^{13}C NMR (75 MHz, $CDCl_3$): δ = 197.2, 172.0, 170.0, 169.8, 168.2, 145.4, 145.0, 143.8, 138.3, 137.9, 133.7, 132.5, 131.0, 130.5, 123.0, 129.3, 128.9, 128.3, 127.6, 126.3, 124.6, 119.0, 96.5, 61.2, 40.4, 40.1, 39.8, 39.5, 39.2, 39.0, 38.7, 28.1, 27.7, 27.6, 25.1, 24.9, 24.2, 23.0, 22.7, 22.5, 21.0, 20.5 ppm. ^{19}F NMR (282.4 MHz, $CDCl_3$): δ = –148.3 ppm.

CCDC-943755 (for **6**) and -943756 (for **10**) contain the supplementary crystallographic data for this paper. These data can be obtained free of charge from The Cambridge Crystallographic Data Centre via www.ccdc.cam.ac.uk/data_request/cif.

Supporting Information (see footnote on the first page of this article): Copies of the ^{1}H and ^{13}C NMR spectra of all new compounds and detailed crystallographic information.

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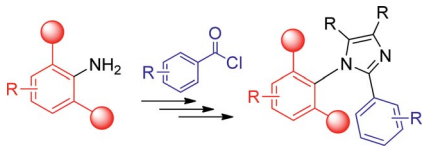
Synthetic Methods

A high-yielding, metal-free procedure is described for the synthesis of 1,2-diarylimidazoles with sterically demanding substituents. This procedure allows for the variation of groups at the N-1 and C-2 positions of the imidazole ring and starts from inexpensive anilines and carboxylic acids. Because the method is highly versatile, 1-aryl-2-alkylimidazoles could also be prepared.



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