Supporting Information

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I. General remarks

NMR spectra were obtained on an Agilent 400-MR DD2 spectrometer. The $^1$H NMR
(400 MHz) chemical shifts were measured relative to CDCl$_3$ and DMSO-$d_6$ as the
internal reference (CDCl$_3$: $\delta = 7.26$ ppm; DMSO-$d_6$: $\delta = 2.50$ ppm). The $^{13}$C NMR
(100 MHz) chemical shifts were given using CDCl$_3$ or DMSO-$d_6$ as the internal
standard (CDCl$_3$: $\delta = 77.16$ ppm; DMSO-$d_6$: $\delta = 39.52$ ppm). High-resolution mass
spectra (HRMS) were obtained with a Shimadzu LCMS-IT-TOF (ESI).

Unless otherwise noted, all reagents were obtained from commercial suppliers and
used without further purification. Cu(OTf)$_2$ were purchased from Shanxi Kaida
Chemical Engineering (China) Co., Ltd. Aryl iodides were purchased from Energy
Chemical (China) Co., Ltd. Arylboronic acids and 1-(naphthalen-1-yl)ethanone (1s)
were purchased from Energy Chemical (China) CO., Ltd. Solvents were dried with an
innovative technology solvent purification system (model no.: PS-MD-5). All
syntheses and manipulations were carried out under an air atmosphere unless
specially noted.

Naphthamide derivatives 1a-1d, 1f-1j, 1q and 1r were synthesized according to
literature procedures.$^{[1]}$ All diaryliodonium salts 2a-2r were synthesized according to
literature procedures.$^{[2-5]}$

II. General procedure for the synthesis of starting materials

General procedure A:

Preparation of methyl 4-($^t$-butylcarbamoyl)-1-naphthoate (1e)

\[
\text{COOH} \quad \text{SOCl}_2, \text{DMF} \quad 80^\circ \text{C}, 0.5 \text{ h} \quad \text{COCl}_2 \quad \text{N}^t\text{BuNH}_2, \text{Et}_3\text{N} \quad \text{DCM, 0}^\circ \text{C-rt}, 0.5 \text{ h} \quad \text{COOMe} \\
\text{COOH} \quad \text{COCl} \quad \text{CH}_3\text{OH}, \text{rt}, 12 \text{ h} \\
\]

A 25 mL round bottom flask was charged with a magnetic stir bar, corresponding
naphthalene-1,4-dicarboxylic acid (5 mmol), DMF ($N,N$-dimethylformamide, 2 drops)
and SOCl$_2$ (5.0 mL). Then the reaction solution was stirred at 80 °C to become clear
for 0.5 h. The mixture was concentrated in vacuo (Bright yellow solid powder).

Evaporation residue was dissolved in CH$_2$Cl$_2$ (DCM, 10mL). The mixture of
**tert-butylamine** (1.1 equiv) and Et₃N (3 equiv) was added drop by drop at 0 °C. The reaction mixture was then stirred at room temperature for 0.5 h. Then 2 mL CH₃OH was added to the mixture. After addition, the solution was stirred at room temperature for 12 h. Then the reaction mixture was quenched with water and extracted with DCM. The organic layer was dried over MgSO₄ and concentrated in vacuo. The residue was purified by column chromatography on silica gel (PE (petroleum ether)/EA (ethyl acetate) = 8/1, v/v) to yield 1e (641.2 mg, 45%) as a white solid. ¹H NMR (400 MHz, CDCl₃): δ = 1.54 (s, 9H), 4.01 (s, 3H), 5.82 (bs, 1H), 7.52 (d, J = 7.6 Hz, 1H), 7.57-7.66 (m, 2H), 8.09 (d, J = 7.2 Hz, 1H), 8.21-8.24 (m, 1H), 8.88 (dd, J = 8.0, 1.3 Hz, 1H) ppm. ¹³C NMR (100 MHz, CDCl₃): δ = 29.0, 52.51, 52.53, 122.9, 125.8, 126.1, 127.3, 128.2, 128.8, 129.1, 130.5, 131.6, 140.6, 167.7, 168.7 ppm. HRMS (ESI): calcd for C₁₇H₁₉NNaO₃ [M+Na]+ 308.1257, found 308.1263.

**General procedure B:**

**Preparation of (E)-methyl 3-(5-(tert-butylcarbamoyl)naphthalen-1-yl)acrylate (1l)**

A Schlenk tube with a magnetic stir bar was charged with corresponding 5-bromo-N-(tert-butyl)-1-naphthamide (0.6 mmol), methyl acrylate (0.9 mmol, 1.5 equiv), Pd(OAc)₂ (0.06 mmol, 10 mol%), PPh₃ (0.12 mmol, 20 mol%), K₂CO₃ (0.9 mmol, 1.5 equiv) and DMF (3.6 mL) under a N₂ atmosphere. Then the reaction solution was stirred at 120 °C for 24 h, and the reaction mixture was cooled to room temperature, and diluted with 3 mL of DCM. The mixture was filtered through a celite pad and washed with 10-20 mL of DCM. The filtrate was concentrated and the residue was purified by column chromatography on silica gel (PE/EA = 5/1, v/v) yield 1l (140.6 mg, 81%) as a white solid. ¹H NMR (400 MHz, CDCl₃): δ = 1.54 (s, 9H), 3.85 (s, 3H), 5.82 (bs, 1H), 6.51 (d, J = 16.0 Hz, 1H), 7.50-7.59 (m, 3H), 7.76 (d, J = 7.2 Hz, 1H), 8.23 (d, J = 8.4 Hz, 1H), 8.31 (d, J = 8.8 Hz, 1H), 8.50 (d, J = 15.6 Hz,
$^{13}$C NMR (100 MHz, CDCl$_3$): $\delta = 29.0, 52.0, 52.3, 121.1, 124.8, 125.4, 125.6, 125.9, 126.6, 127.9, 130.4, 131.7, 132.2, 136.8, 141.9, 167.3, 169.1$ ppm.

HRMS (ESI): calcd for C$_{19}$H$_{22}$NO$_3$ [M+Na]$^+$ 312.1594, found 312.1598.

**General procedure C:**

**Preparation of N-(tert-butyl)-5-(phenylethynyl)-1-naphthamide (1m)**

A Schlenk tube with a magnetic stir bar was charged with corresponding 5-bromo-N-(tert-butyl)-1-naphthamide (2 mmol), Pd(PPh$_3$)$_2$Cl$_2$ (0.08 mmol, 10 mol%), and piperidine (2 mL, 20 equiv) under a N$_2$ atmosphere. Then the reaction solution was stirred at 85 °C for 1 h, and the reaction mixture was cooled to room temperature, and diluted with 3 mL of DCM. The mixture was extracted with DCM (10 mL) and 1 M aqueous HCl (10 mL) for two times, saturated aqueous NaCl for two times and dried over anhydrous MgSO$_4$. The filtrate was concentrated and the residue was purified by column chromatography on silica gel (PE/EA = 10/1, v/v) yield 1m (516.7 mg, 79%) as a white solid. $^1$H NMR (400 MHz, CDCl$_3$): $\delta = 1.55$ (s, 9H), 5.83 (bs, 1H), 7.36-7.43 (m, 3H), 7.50-7.61 (m, 3H), 7.63-7.67 (m, 2H), 7.79 (dd, $J = 7.2, 1.0$ Hz, 1H), 8.27 (d, $J = 8.4$ Hz, 1H), 8.49-8.54 (m, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta = 29.1, 52.3, 87.5, 94.8, 121.4, 123.3, 125.1, 125.8, 126.3, 126.5, 128.4, 128.6, 128.7, 130.1, 131.05, 131.8, 133.6, 136.5, 169.1$ ppm. HRMS (ESI): calcd for C$_{23}$H$_{22}$NO [M+H]$^+$ 328.1696, found 328.1702.

**General procedure D:**

**Preparation of polycyclic aromatic hydrocarbon (PAH) substrates (1k, 1n-1p)**
Polycyclic aromatic hydrocarbon (PAH) substrates were prepared by the following procedure adapted from the literature.

i) Add 1-bromobenzene (2.0 mmol), CuCN (8.0 mmol) and DMF (2.0 mL) to the Schlenk bottle with a magnetic stir bar, and stir the reaction solution at 180 °C for 24 hours under a N₂ atmosphere. Then cooling the reaction mixture to room temperature, to this mixture, FeCl₃ (4.4g, 26.7 mmol) in 2 M aqueous HCl (8.0 mL) was added and stirred at 70 °C for 1 h. Then the mixture was extracted with DCM for four times, washed by 6 M aqueous HCl for two times, saturated aqueous Na₂CO₃ for two times, water for two times, and dried over anhydrous MgSO₄. The organic layer was dried and concentrated, and the resulting crude product 1-naphthonitrile could be used for next step without purification.

ii) A Schlenk tube with a magnetic stir bar was charged with corresponding 1-naphthonitrile (2.0 mmol), conc. H₂SO₄ (0.25 mL, 4.5 mmol) and 'BuOH (3.0 mL). The resulting mixture was stirred at 80 °C for 8-12 h (detected by TLC) and was cooled to room temperature. Then the reaction mixture was diluted with 8 mL DCM and extracted with brine (10 mL × 2). The organic layer was dried and concentrated, and the resulting residue was purified by column chromatography on silica gel (PE/EA = 20/1-10/1, v/v) to provide PAH substrates in 55-74% yields.

\[
\begin{align*}
\text{O} & \quad \text{Ni} \quad \text{'Bu} \\
\text{N-(tert-Butyl)-1,2-dihydroacenaphthylene-5-carboxamide (1k)}
\end{align*}
\]

According to above procedure, compound 1k was prepared from 5-bromo-1,2-dihydroacenaphthylene in 74% yield as a yellow solid. ¹H NMR (400 MHz, CDCl₃): δ = 1.53 (s, 9H), 3.36-3.44 (m, 4H), 5.84 (bs, 1H), 7.24 (d, J = 6.8 Hz, 1H), 7.32 (d, J = 7.2 Hz, 1H), 7.52 (m, 1H), 7.62 (d, J = 6.8 Hz, 1H), 8.06 (d, J = 8.4 Hz, 1H) ppm. ¹³C NMR (100 MHz, CDCl₃): δ = 29.1, 30.4, 30.5, 52.0, 118.4, 120.0, 120.9, 127.4, 128.8, 129.1, 130.8, 139.6, 146.3, 149.1, 168.7 ppm. HRMS (ESI): calcd for C₁₇H₂₀NO [M+H]⁺ 254.1539, found 254.1548.
N-(tert-Butyl)phenanthrene-9-carboxamide (1n)

According to above procedure, compound 1n was prepared from 9-bromophenanthrene in 70% yield as a white solid. \( ^1 \)H NMR (400 MHz, CDCl\(_3\)): \( \delta = 1.57 \) (s, 9H), 5.93 (bs, 1H), 7.59-7.72 (m, 4H), 7.80 (s, 1H), 7.89 (dd, \( J = 8.0, 1.2 \) Hz, 1H), 8.27-8.32 (m, 1H), 8.67 (d, \( J = 8.4 \) Hz, 1H), 8.69-8.72 (m, 1H). ppm \( ^{13} \)C NMR (100 MHz, CDCl\(_3\)): \( \delta = 29.1, 52.3, 122.8, 123.0, 125.6, 126.3, 127.1, 127.2, 127.3, 127.8, 128.8, 129.1, 130.6, 130.7, 130.9, 135.0, 169.3 \) ppm. HRMS (ESI): calcd for C\(_{19}\)H\(_{20}\)NO \([M+H]^+\) 278.1539, found 278.1536.

\( ^\text{tBu} \text{HN} = \text{O} \)

N-(tert-Butyl)pyrene-1-carboxamide (1o)

According to above procedure, compound 1o was prepared from 1-bromopyrene in 61% yield as a white solid. \( ^1 \)H NMR (400 MHz, CDCl\(_3\)): \( \delta = 1.61 \) (s, 9H), 5.96 (bs, 1H), 8.02-8.07 (m, 3H), 8.09-8.16 (m, 3H), 8.22 (d, \( J = 7.2 \) Hz, 2H), 8.53 (d, \( J = 9.2 \) Hz, 1H) ppm. \( ^{13} \)C NMR (100 MHz, CDCl\(_3\)): \( \delta = 29.2, 52.4, 124.45, 124.49, 124.6, 124.9, 125.7, 125.8, 126.4, 127.3, 128.4, 128.5, 128.7, 130.9, 131.3, 132.3, 132.7, 169.7 \) ppm. HRMS (ESI): calcd for C\(_{21}\)H\(_{19}\)NNaO \([M+Na]^+\) 324.1359, found 324.1363.

\( ^\text{tBu} \text{HN} = \text{O} \)

N-(tert-Butyl)fluoranthene-3-carboxamide (1p)

According to above procedure, compound 1p was prepared from
3-bromofluoranthene in 55% yield as a yellow solid. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 1.56 (s, 9H), 5.95 (bs, 1H), 7.36-7.43 (m, 2H), 7.66 (dd, J = 8.4, 6.8 Hz, 1H), 7.77 (d, J = 7.2 Hz, 1H), 7.84-7.93 (m, 4H), 8.25-8.28 (m, 1H) \) ppm. \(^{13}\)C NMR (100 MHz, CDCl\(_3\)): \(\delta = 29.1, 52.3, 119.1, 120.7, 121.7, 122.0, 125.5, 127.2, 127.5, 127.9, 128.3, 129.1, 132.7, 134.8, 137.2, 138.7, 139.2, 140.1, 168.2 \) ppm. HRMS (ESI): calcd for C\(_{21}\)H\(_{20}\)NO \([M+Na]^{+}\) 302.1539, found 302.1548.

**General procedure E:**

**Preparation of 2,2-dimethyl-1-(naphthalen-1-yl)propan-1-one (1t)**

A Schlenk tube with a magnetic stir bar was charged with 1-bromonaphthalene (2.0 mmol) and THF (tetrahydrofuran, 4 mL) under a N\(_2\) atmosphere. 1M of \(^n\)BuLi in hexane (2.5 mL) was added dropwise to the reaction solution at -78 °C, and then the reaction mixture was stirred at -78 °C for 50 min. Then 0.25 mL (2 mmol, 1.0 equiv) \(^t\)BuCOCl was added dropwise to the reaction mixture, warmed and stirred at room temperature for 2 h. Finally, the reaction mixture was quenched with NH\(_4\)Cl (aq.), diluted with DCM and extracted with brine, the organic layer was dried and concentrated, the residue was purified by column chromatography on silica gel (PE/EA = 60/1, v/v) yield 1t (377.5 mg, 89%) as a white solid. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 1.32 (s, 9H), 7.35 (dd, J = 7.2, 1.2 Hz, 1H), 7.43-7.52 (m, 3H), 7.59-7.64 (m, 1H), 7.84-7.88 (m, 2H) \) ppm. \(^{13}\)C NMR (100 MHz, CDCl\(_3\)): \(\delta = 27.4, 45.7, 122.4, 124.4, 125.6, 126.3, 126.9, 128.6, 129.1, 130.0, 133.7, 139.0, 214.8 \) ppm. HRMS (ESI): calcd for C\(_{15}\)H\(_{16}\)NaO \([M+Na]^{+}\) 235.1093, found 235.1095.

III. Optimization of the reaction conditions of remote C–H arylation

An oven-dried Schlenk test tube with a magnetic stirring bar was charged with N-(tert-butyl)-1-naphthamide 1a (0.2 mmol, 1.0 equiv.), mesityl(phenyl)iodonium triflate 2a (0.3 mmol, 1.5 equiv.), [Cu] catalyst (10 mol%), and solvent (1 mL) under
a N₂ atmosphere. The mixture was stirred at the designed temperature for 24 h. After the reaction was cooled down to ambient temperature, it was diluted with 3 mL of CH₂Cl₂, filtered through a celite pad, and then washed with 15-20 mL of CH₂Cl₂. The combined organic phase was concentrated under reduced pressure and the residue was purified by column chromatography on silica gel (PE/THF = 20/1, v/v) to provide the desired product 3a.

**Table S1. Optimization of the arylation reaction of 1a and 2a**

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<th>T (°C)</th>
<th>Yield (%)</th>
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<td>3</td>
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<td>53</td>
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<tr>
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<td>PhCF₃</td>
<td>Cu(OTf)$_2$</td>
<td>70</td>
<td>trace</td>
</tr>
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</table>

*Reaction conditions: 1a (0.2 mmol, 1.0 equiv), 2a (0.3 mmol, 1.5 equiv), [Cu] (10 mol%) and solvent (1 mL) under a N₂ atmosphere for 24 h. Isolated yield. DCE = 1,2-Dichloroethane. DCM = Dichloromethane. ODCB = 1,2-Dichlorobenzene. MeOH = Methyl alcohol. DMF = N,N-Dimethylformamide. N.R: no reaction.

### IV. General procedure for the synthesis of arylation products

![Reaction Scheme](image)

An oven-dried Schlenk tube with a magnetic stir bar was charged with 1-naphthoic acid derivative 1 (0.2 mmol, 1.0 equiv.), diaryliodonium salts 2 (0.3 mmol, 1.5 equiv.), Cu(OTf)$_2$ (7.2 mg, 10 mol%) and DCE (1 mL) under a N₂ atmosphere. The mixture was stirred at 50-80 °C for 24 h. After the reaction was cooled down to ambient temperature, it was diluted with 3 mL of CH₂Cl₂. The solution was filtered through a celite pad and washed with 15-20 mL of CH₂Cl₂. The filtrate was concentrated under reduced pressure and the residue was purified by column chromatography on silica gel to provide the corresponding products 3 and 4.

### V. Experimental data for the described substances

**N-(tert-Butyl)-7-phenyl-1-naphthamide (3a)**

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 3a (55.8 mg, 92%) as colorless oil. $^1$H NMR (400 MHz, CDCl₃): $\delta = 1.55$ (s, 9H), $5.87$ (s, 1H), 7.37-7.41
N-(tert-Butyl)-7-(p-tolyl)-1-naphthamide (3b)

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), mesityl(p-tolyl)iodonium triflate (2b) (145.8 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 3b (47.6 mg, 75%) as colorless oil. $^1$H NMR (400 MHz, CDCl$_3$): $\delta = 1.55$ (s, 9H), 2.42 (s, 3H), 5.84 (s, 1H), 7.30 (d, $J = 8.0$ Hz, 2H), 7.4-7.45 (m, 1H), 7.57 (dd, $J = 7.2$, 1.2 Hz, 1H), 7.61-7.65 (m, 2H), 7.77 (dd, $J = 8.4$, 1.6 Hz, 1H), 7.90 (t, $J = 8.4$ Hz, 2H), 8.48 (s, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta = 21.3$, 29.1, 52.2, 123.0, 124.8, 125.0, 126.1, 127.5, 128.9, 129.8, 129.9, 130.5, 132.8, 136.2, 137.5, 138.2, 139.6, 169.3 ppm. The analytical data matched those reported in the literature.$^{[1]}$

N-(tert-Butyl)-7-(m-tolyl)-1-naphthamide (3c)

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), mesityl(m-tolyl)iodonium triflate (2c) (145.8 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 3c (45.1 mg, 71%) as colorless oil. $^1$H NMR (400 MHz, CDCl$_3$): $\delta = 1.55$ (s, 9H), 2.45 (s, 3H), 5.85 (s, 1H), 7.21 (d, $J = 7.6$ Hz, 1H), 7.38 (t, $J = 7.4$ Hz, 1H), 7.41-7.46 (m, 1H), 7.53 (d, $J = 8.4$ Hz, 2H), 7.58 (d, $J = 6.8$ Hz, 1H), 7.78 (dd, $J = 8.4$, 1.6 Hz, 1H), 7.91 (t, $J = 8.4$ Hz, 1H), 7.91 (t, $J = 8.4$ Hz, 1H).
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$\delta$ = 21.7, 29.1, 52.22, 76.8, 77.2, 77.5, 123.3, 124.8, 126.3, 128.39, 128.41, 128.8, 129.0, 129.9, 130.5, 132.9, 136.3, 138.6, 139.8, 141.1, 169.3 ppm. The analytical data matched those reported in the literature.[1]

$N$-(tert-Butyl)-7-($o$-tolyl)-1-naphthamide (3d)

Following the general procedure, the reaction of $N$-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), mesityl($o$-tolyl)iodonium triflate (2d) (145.8 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/DCM/EA = 40/200/1, v/v/v) yields 3d (36.2 mg, 57%) as colorless oil. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 1.51 (s, 9H), 2.34 (s, 3H), 5.83 (bs, 1H), 7.27-7.35 (m, 4H), 7.43-7.47 (m, 1H), 7.52 (dd, $J$ = 8.4, 1.6 Hz, 1H), 7.58 (dd, $J$ = 7.2, 1.2 Hz, 1H), 7.91 (t, $J$ = 8.8 Hz, 2H), 8.24 (s, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 20.8, 29.1, 52.2, 124.8, 125.6, 126.0, 127.6, 128.0, 128.4, 130.0, 130.2, 130.6, 132.6, 135.7, 136.2, 140.6, 141.8, 169.2 ppm. The analytical data matched those reported in the literature.[1]

$N$-(tert-Butyl)-7-($o$-tolyl)-1-naphthamide (3e)

Following the general procedure, the reaction of $N$-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), mesityl(4-methoxyphenyl)iodonium triflate (2e) (150.6 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 60 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 15/1, v/v) yields 3e (36.2 mg, 54%) as colorless oil. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 1.55 (s, 9H), 3.87 (s, 3H), 5.84 (bs, 1H), 7.00-7.05 (m, 2H), 7.39-7.43 (m, 1H), 7.56 (dd, $J$ = 6.8, 1.2 Hz, 1H), 7.64-7.68 (m, 2H), 7.75 (dd, $J$ = 8.4, 1.6 Hz, 1H), 7.89 (t, $J$ = 7.6 Hz, 2H), 8.44 (t, $J$ = 0.8 Hz, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 29.1, 52.2, 55.5, 114.5, 122.6,
124.6, 125.0, 126.0, 128.6, 128.9, 129.9, 130.5, 132.6, 133.6, 136.1, 139.3, 159.5, 169.3 ppm. HRMS (ESI): calcd for C_{22}H_{24}NO_{2} [M+H]^+ 334.1802, found 334.1807.

**N-(tert-Butyl)-7-(4-phenoxypheyl)-1-naphthamide (3f)**

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), mesityl(4-phenoxypheyl)iodonium triflate (2f) (169.2 mg, 0.30 mmol), Cu(OTf)_2 (7.2 mg, 10 mol%), in DCE (1 mL) at 60 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 15/1, v/v) yields 3f (48.2 mg, 61%) as colorless oil. \(^1\)H NMR (400 MHz, CDCl_3): \(\delta = 1.55 \) (s, 9H), 5.86 (bs, 1H), 7.07-7.11 (m, 3H), 7.12-7.17 (m, 2H), 7.35-7.41 (m, 2H), 7.41-7.45 (m, 1H), 7.56-7.59 (m, 1H), 7.66-7.71 (m, 2H), 7.76 (dd, \(J = 8.4\), 2.0 Hz, 1H), 7.91 (t, \(J = 8.4\) Hz, 2H), 8.47 (s, 1H) ppm. \(^{13}\)C NMR (100 MHz, CDCl_3): \(\delta = 29.1, 29.9, 52.3, 119.3, 123.0, 123.6, 124.5, 124.8, 125.0, 126.0, 128.9, 129.0, 130.0, 130.5, 132.8, 136.09, 136.11, 139.0, 157.2, 157.2, 169.3 ppm. The analytical data matched those reported in the literature.[1]

**N-(tert-Butyl)-7-(2-methoxyphenyl)-1-naphthamide (3g)**

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), mesityl(2-methoxypheyl)iodonium triflate (2g) (150.6 mg, 0.30 mmol), Cu(OTf)_2 (7.2 mg, 10 mol%), in DCE (1 mL) at 60 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 15/1, v/v) yields 3g (33.4 mg, 50%) as colorless oil. \(^1\)H NMR (400 MHz, CDCl_3): \(\delta = 1.52 \) (s, 9H), 3.84 (s, 3H), 5.83 (bs, 1H), 7.03 (d, \(J = 8.0\) Hz, 1H), 7.08 (td, \(J = 7.6, 0.8\) Hz, 1H), 7.37 (td, \(J = 8.0, 1.6\) Hz, 1H), 7.41-7.46 (m, 2H), 7.56 (dd, \(J = 7.2, 1.2\) Hz, 1H), 7.74 (dd, \(J = 8.4, 1.6\) Hz, 1H), 7.86-7.90 (m, 2H), 8.39 (s, 1H) ppm. \(^{13}\)C NMR (100 MHz, CDCl_3): \(\delta = 29.1, 52.1, 55.7, 111.4, 121.2, 124.7, 124.8, 125.6, 127.7, 128.7, 129.0, 129.8, 130.1,
130.7, 131.4, 132.7, 136.2, 137.4, 156.7, 169.3 ppm. HRMS (ESI): calcd for C_{22}H_{24}NO_{2} [M+H]^+ 334.1802, found 334.1808.

**Ethyl 4-(8-(tert-butylcarbamoyl)naphthalen-2-yl)benzoate (3h)**

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), (4-(ethoxycarbonyl)phenyl)(mesityl)iodonium triflate (2h) (163.2 mg, 0.30 mmol), Cu(OTf)_{2} (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 10/1, v/v) yields 3h (49.6 mg, 66%) as colorless oil. \( ^1 \)H NMR (400 MHz, CDCl_{3}): \( \delta = 1.42 \) (t, \( J = 7.2 \) Hz, 3H), 1.54 (s, 9H), 4.41 (q, \( J = 7.2 \) Hz, 2H), 5.90 (s, 1H), 7.43-7.48 (m, 1H), 7.58 (d, \( J = 6.9 \) Hz, 1H), 7.75-7.81 (m, 3H), 7.89-7.95 (m, 2H), 8.14 (d, \( J = 8.4 \) Hz, 2H), 8.54 (s, 1H) ppm. \( ^{13} \)C NMR (100 MHz, CDCl_{3}): \( \delta = 14.5, 29.1, 52.3, 61.2, 76.8, 77.2, 77.45, 124.0, 125.1, 125.4, 125.9, 127.5, 129.1, 129.5, 130.0, 130.3, 130.4, 133.3, 136.3, 138.4, 145.4, 166.6, 169.1 \) ppm. The analytical data matched those reported in the literature.\(^{[1]}\)

**N-(tert-Butyl)-7-(4-(trifluoromethyl)phenyl)-1-naphthamide (3i)**

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), mesityl(4-(trifluoromethyl)phenyl)iodonium triflate (2i) (162.0 mg, 0.30 mmol), Cu(OTf)_{2} (7.2 mg, 10 mol%), in DCE (1 mL) at 80 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 10/1, v/v) yields 3i (52.1 mg, 70%) as colorless oil. \( ^1 \)H NMR (400 MHz, CDCl_{3}): \( \delta = 1.55 \) (s, 9H), 5.86 (bs, 1H), 7.44-7.50 (m, 1H), 7.60 (dd, \( J = 7.2, 1.2 \) Hz, 1H), 7.72-7.78 (m, 3H), 7.82 (d, \( J = 8.0 \) Hz, 2H), 7.92 (d, \( J = 8.0 \) Hz, 1H), 7.96 (d, \( J = 8.4 \) Hz, 1H), 8.54 (s, 1H) ppm. \( ^{13} \)C NMR (100 MHz, (CD_{3})_{2}SO): \( \delta = 28.6, 51.1, 123.0, 123.6, 124.4 \) (q, \( J_{CF} = 270 \) Hz), 125.2, 125.6, 125.8, 126.2 (q, \( J_{CF} = 4 \) Hz ), 127.7, 128.4, 129.0, 129.3, 130.0, 132.7,
136.49, 136.53, 144.26, 144.27, 168.3 ppm. HRMS (ESI): calcd for C_{22}H_{21}F_{3}NO [M+H]+ 372.1570, found 372.1572.

**Ethyl 2-(8-(tert-butylcarbamoyl)naphthalen-2-yl)benzoate (3j)**

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), (2-(ethoxycarbonyl)phenyl)(mesityl)iodonium triflate (2j) (163.2 mg, 0.30 mmol), Cu(OTf)2 (7.2 mg, 10 mol%), in DCE (1 mL) at 80 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 10/1, v/v) yields 3j (42.8 mg, 57%) as a white solid. \(^1\)H NMR (400 MHz, CDCl3): \(\delta = 0.98 (t, J = 7.2 \text{ Hz}, 3H), 1.51 (s, 9H), 4.10 (q, J = 7.2 \text{ Hz}, 2H), 5.83 (bs, 1H), 7.42-7.50 (m, 4H), 7.57 (td, \(J = 7.6, 1.2 \text{ Hz}, 2H), 7.85 (d, \(J = 8.4 \text{ Hz}, 1H), 7.89-7.92 (m, 2H), 8.26 (t, \(J = 0.8 \text{ Hz} 1H) \text{ ppm.} \)

\(\text{\textsuperscript{13}C \text{ NMR (100 MHz, CDCl3): } \delta = 14.0, 29.1, 52.2, 61.1, 124.6, 124.9, 125.0, 127.5, 127.7, 127.9, 130.0, 130.1, 130.2, 131.1, 131.4, 131.6, 132.8, 136.1, 140.3, 142.7, 168.5, 169.2 \text{ ppm. HRMS (ESI): calcd for C}_{24}\text{H}_{25}\text{NNaO}_{3} [M+Na\textsuperscript{+}] 398.1727, found 398.1731.} \)

**N-(tert-Butyl)-7-(4-fluorophenyl)-1-naphthamide (3k)**

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), (4-fluorophenyl)(mesityl)iodonium triflate (2k) (147.0 mg, 0.30 mmol), Cu(OTf)2 (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 3k (51.4 mg, 80%) as colorless oil. \(^1\)H NMR (400 MHz, CDCl3): \(\delta = 1.55 (s, 9H), 5.85 (s, 1H), 7.14-7.20 (m, 2H), 7.42-7.46 (m, 1H), 7.58 (dd, \(J = 7.2, 1.2 \text{ Hz}, 1H), 7.65-7.70 (m, 2H), 7.73 (dd, \(J = 8.4, 2.0 \text{ Hz}, 1H), 7.91 (t, \(J = 8.0 \text{ Hz}, 2H), 8.45 (s, 1H) \text{ ppm.} \)

\(\text{\textsuperscript{13}C \text{ NMR (100 MHz, CDCl3): } \delta = 29.1, 52.3, 115.9 (J}_{C,F} = 21 \text{ Hz), 123.3, 125.0 (J}_{C,F} = 10 \text{ Hz), 126.0, 129.0, 129.15, 129.23, 130.0, 130.5, 132.9, 136.1, 137.3, (J}_{C,F} = 3 \text{ Hz).} \)
138.7, 162.8 (\(J_{CF} = 245 \text{ Hz}\)), 169.2 ppm. The analytical data matched those reported in the literature.\(^{[1]}\)

\[ \text{N-}(\text{tert-Butyl})-7-(3\text{-chlorophenyl})-1\text{-naphthamide (3l)} \]

Following the general procedure, the reaction of \(N\)-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), (3-chlorophenyl)(mesityl)iodonium triflate (2l) (151.8 mg, 0.30 mmol), Cu(OTf)\(_2\) (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 3l (39.1 mg, 58%) as colorless oil. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 1.55\) (s, 9H), 5.85 (bs, 1H), 7.35 (dt, \(J = 8.0\), 1.4 Hz, 1H), 7.41 (t, \(J = 7.6\) Hz, 1H), 7.45-7.48 (m, 1H), 7.58-7.61 (m, 2H), 7.69 (t, \(J = 2.0\) Hz, 1H), 7.73 (dd, \(J = 8.4, 1.8\) Hz, 1H), 7.92 (t, \(J = 9.2\) Hz, 2H), 8.48 (s, 1H) ppm. \(^{13}\)C NMR (100 MHz, CDCl\(_3\)): \(\delta = 29.1, 52.3, 123.7, 125.2, 125.3, 125.8, 125.9, 127.65, 127.71, 129.1, 130.0, 130.3, 130.4, 133.2, 134.9, 136.3, 138.3, 143.0, 169.1\) ppm. HRMS (ESI): calcd for C\(_{21}\)H\(_{20}\)ClNNaO [M+Na]\(^+\) 360.1126, 362.1096, found 360.1128, 362.1097.

\[ \text{7-}(3\text{-Bromophenyl})-\text{N-}(\text{tert-butyl})-1\text{-naphthamide (3m)} \]

Following the general procedure, the reaction of \(N\)-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), (3-bromophenyl)(mesityl)iodonium triflate (2m) (165.3 mg, 0.30 mmol), Cu(OTf)\(_2\) (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 3m (51.8 mg, 68%) as a white solid. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 1.55\) (s, 9H), 5.86 (bs, 1H), 7.35 (t, \(J = 8.0\) Hz, 1H), 7.43-7.48 (m, 1H), 7.51 (ddd, \(J = 8.0, 2.0, 0.8\) Hz, 1H), 7.59 (ddd, \(J = 7.2, 1.2\) Hz, 1H), 7.64 (ddd, \(J = 7.6, 1.6, 0.8\) Hz, 1H), 7.73 (dd, \(J = 8.8, 2.0\) Hz, 1H), 7.84 (t, \(J = 2.0\) Hz, 1H), 7.92 (t, \(J = 9.2\) Hz, 2H), 8.47 (t, \(J = 0.8\) Hz, 1H) ppm. \(^{13}\)C NMR (100 MHz, CDCl\(_3\)): \(\delta = 29.1, 52.3, 123.1, 123.7, 125.2, 125.3, 125.3, 129.1, 130.0, 130.3, 130.4, 133.2, 134.9, 136.3, 138.3, 143.0, 169.1\) ppm. HRMS (ESI): calcd for C\(_{21}\)H\(_{20}\)ClNNaO [M+Na]\(^+\) 360.1126, 362.1096, found 360.1128, 362.1097.

\[ \text{N-(tert-Butyl)-7-(4-iodophenyl)-1-naphthamide (3n)} \]

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), (4-iodophenyl)(mesityl)iodonium triflate (2n) (179.4 mg, 0.30 mmol), Cu(OTf)_2 (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 3n (54.9 mg, 64%) as a white solid. \( ^1\)H NMR (400 MHz, CDCl_3): \( \delta \) = 1.54 (s, 9H), 5.85 (bs, 1H), 7.42-7.47 (m, 3H), 7.58 (dd, \( J = 7.2, 1.2 \) Hz, 1H), 7.72 (dd, \( J = 8.4, 2.0 \) Hz, 1H), 7.79-7.83 (m, 2H), 7.91 (t, \( J = 8.8 \) Hz, 2H), 8.47 (t, \( J = 0.8 \) Hz 1H) ppm. \( ^{13}\)C NMR (100 MHz, CDCl_3): \( \delta \) = 29.1, 52.3, 93.5, 123.38, 125.1, 125.2, 125.7, 129.1, 129.4, 130.0, 130.5, 133.1, 136.2, 138.1, 138.5, 140.7, 169.2 ppm. HRMS (ESI): calcd for C_{21}H_{20}INNaO [M+Na]^+ 452.0482, 453.0515, found 452.0489, 453.0520.

\[ \text{N-(tert-Butyl)-7-(3,4-dichlorophenyl)-1-naphthamide (3o)} \]

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), (3,4-dichlorophenyl)(mesityl)iodonium triflate (2o) (162.0 mg, 0.30 mmol), Cu(OTf)_2 (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 3o (42.3 mg, 57%) as a white solid. \( ^1\)H NMR (400 MHz, CDCl_3): \( \delta \) = 1.55 (s, 9H), 5.87 (bs, 1H), 7.44-7.48 (m, 1H), 7.53 (d, \( J = 1.2 \) Hz, 2H), 7.59 (dd, \( J = 6.8, 1.2 \) Hz, 1H), 7.69 (dd, \( J = 8.4, 2.0 \) Hz, 1H), 7.77 (t, \( J = 1.2 \) Hz, 1H), 7.89-7.94 (m, 2H), 8.45-8.47 (m, 1H) ppm. \( ^{13}\)C NMR (100 MHz, CDCl_3): \( \delta \) = 29.1, 52.3, 123.7, 125.3, 125.4, 125.5, 126.9, 129.3, 129.4, 130.0, 130.4, 131.0, 131.9, 133.1, 133.2, 136.2, 137.2, 141.2,
169.1 ppm. HRMS (ESI): calcd for C_{21}H_{20}Cl_{2}NO [M+H]^+ 372.0916, 374.0887, 373.0950, found 372.0920, 374.0891, 373.0952.

\[
\text{N-}(\text{tert-Butyl)}-7-(3\text{-formyl-4-methoxyphenyl})-1\text{-naphthamide (3p)}
\]

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), (4-formyl-3-methoxyphenyl)(mesityl)iodonium triflate (2p) (159.6 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 60 °C. After 24 h, purification by column chromatography on silica gel (PE/DCM/EA = 10/10/1, v/v/v) yields 3p (42.1 mg, 58%) as colorless oil. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 1.55 (s, 9H), 4.00 (s, 3H), 5.88 (bs, 1H), 7.12 (d, $J$ = 8.8 Hz, 1H), 7.43 (dd, $J$ = 8.4, 7.2 Hz, 1H), 7.58 (dd, $J$ = 7.0, 1.2 Hz, 1H), 7.76 (dd, $J$ = 8.5, 1.8 Hz, 1H), 7.87-7.96 (m, 3H), 8.17 (d, $J$ = 2.5 Hz, 1H), 8.45 (t, $J$ = 0.8 Hz 1H), 10.52 (s, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 29.1, 52.3, 56.0, 112.5, 122.8, 124.99, 125.04, 125.7, 127.3, 129.1, 130.0, 130.4, 132.9, 133.7, 134.9, 136.1, 138.0, 161.6, 169.2, 189.9 ppm. HRMS (ESI): calcd for C$_{23}$H$_{24}$NO$_3$ [M+H]$^+$ 362.1751, found 362.1757.

\[
\text{N-}(\text{tert-Butyl)}-[2,2'-\text{binaphthalene}]\text{-8-carboxamide (3q)}
\]

Following the general procedure, the reaction of N-(tert-butyl)-1-naphthamide (1a) (45.4 mg, 0.20 mmol), mesityl(naphthalen-2-yl)iodonium triflate (2q) (156.6 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 3q (46.6 mg, 66%) as colorless oil. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 1.56 (s, 9H), 5.89 (s, 1H), 7.43-7.48 (m, 1H), 7.48-7.56 (m, 2H), 7.60 (dd, $J$ = 6.8, 1.2 Hz, 1H), 7.86-7.98 (m, 7H), 8.17-8.19 (m, 1H), 8.63 (t, $J$ = 0.8 Hz 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 29.1, 52.3, 76.8, 77.2, 77.45, 123.7, 125.0, 125.1, 125.83, 126.2, 126.35, 126.41, 126.5, 127.8, 128.5, 128.7, 129.0, 130.0, 130.5, 132.8, 133.0, 133.8, 136.2,
138.4, 139.6, 169.3 ppm. The analytical data matched those reported in the literature.[1]

\[ \text{N-(tert-Butyl)-7-(thiophen-2-yl)-1-naphthamide (3r)} \]

Following the general procedure, the reaction of \( \text{N-(tert-butyl)-1-naphthamide (1a)} \) (45.4 mg, 0.20 mmol), mesityl(thiophen-2-yl)iodonium triflate (2r) (111.3 mg, 0.30 mmol), Cu(OTf)\(_2\) (7.2 mg, 10 mol%), in DCE (1 mL) at 50 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 3r (21.6 mg, 35%) as colorless oil. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \( \delta = 1.57 \) (s, 9H), 5.84 (bs, 1H), 7.10-7.14 (m, 1H), 7.33 (dd, \( J = 5.2, 1.2 \) Hz, 1H), 7.39-7.44 (m, 1H), 7.45 (dd, \( J = 3.6, 0.8 \) Hz, 1H), 7.57 (dd, \( J = 7.2, 1.2 \) Hz, 1H), 7.78 (dd, \( J = 8.4, 1.6 \) Hz, 1H), 7.85 (dd, \( J = 8.4, 3.6 \) Hz, 2H), 8.48 (s, 1H) ppm. \(^{13}\)C NMR (100 MHz, CDCl\(_3\)): \( \delta = 29.1, 52.3, 121.7, 123.9, 124.9, 125.0, 125.4, 125.6, 128.4, 129.1, 129.9, 130.4, 132.9, 133.0, 136.1, 144.5, 169.1 \) ppm. HRMS (ESI): calcd for C\(_{19}\)H\(_{20}\)NOS [M+H]\(^+\) 310.1260, found 310.1262.

\[ \text{N-(tert-Butyl)-4-methyl-7-phenyl-1-naphthamide (4a)} \]

Following the general procedure, the reaction of \( \text{N-(tert-butyl)-4-methyl-1-naphthamide (1b)} \) (48.2 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)\(_2\) (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 4a (56.5 mg, 89%) as a white solid. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \( \delta = 1.54 \) (s, 9H), 2.73 (d, \( J = 0.8 \) Hz, 3H), 5.83 (s, 1H), 7.27 (dd, \( J = 7.2, 0.8 \) Hz, 1H), 7.36-7.41 (m, 1H), 7.46-7.51 (m, 3H), 7.72-7.75 (m, 2H), 7.82 (dd, \( J = 8.8, 2.0 \) Hz, 1H), 8.09 (d, \( J = 9.2 \) Hz, 1H), 8.54 (d, \( J = 1.6 \) Hz, 1H) ppm. \(^{13}\)C NMR (100 MHz, CDCl\(_3\)): \( \delta = 19.8, 29.1, 52.1, 124.0, 124.8, 125.1, 125.6, 125.9, 130.4, 132.9, 133.0, 136.1, 144.5, 169.1 \) ppm.
127.59, 127.61, 129.0, 130.6, 132.0, 134.7, 136.7, 139.2, 141.1, 169.5 ppm. The analytical data matched those reported in the literature.[1]

\[\text{N-(tert-Butyl)-4,7-diphenyl-1-naphthamide (4b)}\]

Following the general procedure, the reaction of \(N\)-(tert-butyl)-4-phenyl-1-naphthamide (1c) (60.6 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)\(_2\) (7.2 mg, 10 mol\%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 10/1, v/v) yields 4b (66.7 mg, 88%) as a white solid. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 1.57\) (s, 9H), 5.91 (s, 1H), 7.37-7.42 (m, 2H), 7.46-7.55 (m, 7H), 7.62 (d, \(J = 7.2\) Hz, 1H), 7.71-7.75 (m, 3H), 7.98 (d, \(J = 8.8\) Hz, 1H), 8.56 (d, \(J = 1.6\) Hz, 1H) ppm. \(^{13}\)C NMR (100 MHz, CDCl\(_3\)): \(\delta = 29.1, 52.3, 123.6, 124.5, 125.9, 126.2, 127.2, 127.6, 127.7, 127.8, 128.5, 129.1, 130.1, 130.9, 131.2, 135.8, 139.4, 140.3, 140.9, 142.3, 169.4\) ppm. The analytical data matched those reported in the literature.[1]

\[\text{N-(tert-Butyl)-4-methoxy-7-phenyl-1-naphthamide (4c)}\]

Following the general procedure, the reaction of \(N\)-(tert-butyl)-4-methoxy-1-naphthamide (1d) (51.4 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)\(_2\) (7.2 mg, 10 mol\%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 10/1, v/v) yields 4c (54.0 mg, 81%) as a white solid. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \(\delta = 1.53\) (s, 9H), 4.03 (s, 3H), 5.82 (s, 1H), 6.74 (d, \(J = 8.0\) Hz, 1H), 7.36-7.41 (m, 1H), 7.48 (t, \(J = 7.6\) Hz, 2H), 7.54 (d, \(J = 8.0\) Hz, 1H), 7.71-7.75 ppm.
(m, 2H), 7.77 (dd, J = 8.8, 1.6 Hz, 1H), 8.35 (d, J = 8.8 Hz, 1H), 8.54 (d, J = 1.6 Hz, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 29.1, 52.0, 55.8, 102.5, 123.0, 123.3, 124.9, 125.4, 126.1, 127.63, 127.64, 128.7, 129.0, 131.8, 140.1, 141.2, 157.0, 169.3 ppm. The analytical data matched those reported in the literature.$^{[1]}$

Methyl 4-(tert-butylcarbamoyl)-6-phenyl-1-naphthoate (4d)

Following the general procedure, the reaction of methyl 4-(tert-butylcarbamoyl)-1-naphthoate (1e) (57.0 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/DCM/EA = 20/20/1, v/v/v) yields 4d (51.9 mg, 72%) as colorless oil

$^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 1.55 (s, 9H), 4.02 (s, 3H), 5.91 (bs, 1H), 7.38-7.42 (m, 1H), 7.47-7.54 (m, 3H), 7.72 (dd, J = 8.4, 1.2 Hz, 2H), 7.89 (dd, J = 9.2, 2.0 Hz, 1H), 8.08 (d, J = 7.2 Hz, 1H), 8.43 (d, J = 2.0 Hz, 1H), 8.96 (d, J = 9.2 Hz, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 29.0, 52.54, 52.55, 123.3, 123.4, 126.7, 127.5, 127.7, 127.9, 128.6, 129.08, 129.12, 130.8, 130.9, 139.6, 140.5, 140.7, 167.6, 168.7 ppm. HRMS (ESI): calcd for C$_{23}$H$_{24}$NO$_3$ [M+H]$^+$ 362.1751, found 362.1752.

$N$-(tert-Butyl)-4-fluoro-7-phenyl-1-naphthamide (4e)

Following the general procedure, the reaction of $N$-(tert-butyl)-4-fluoro-1-naphthamide (1f) (49.0 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 10/1, v/v) yields 4e (45.6 mg, 71%) as a white solid. $^1$H NMR
(400 MHz, CDCl₃): δ = 1.54 (s, 9H), 5.86 (bs, 1H), 7.05-7.10 (m, 1H), 7.38-7.43 (m, 1H), 7.47-7.54 (m, 3H), 7.70-7.73 (m, 2H), 7.84 (dd, J = 8.8, 1.6 Hz, 1H), 8.19 (d, J = 8.8 Hz, 1H), 8.52 (s, 1H) ppm. ¹³C NMR (100 MHz, CDCl₃): δ = 29.1, 52.3, 108.4 (d, J_{CF} = 21 Hz), 121.5 (d, J_{CF} = 5 Hz), 123.0, 123.1, 123.5 (d, J_{CF} = 2 Hz), 125.4 (d, J_{CF} = 9 Hz), 126.6 (d, J_{CF} = 2 Hz), 127.7, 128.0, 129.1, 132.3 (d, J_{CF} = 4 Hz), 132.4 (d, J_{CF} = 5 Hz), 140.7, 159.7 (d, J_{CF} = 254 Hz), 168.6 ppm. The analytical data matched those reported in the literature.[1]

4-Bromo-N-(tert-butyl)-7-phenyl-1-naphthamide (4f)

Following the general procedure, the reaction of N-(tert-butyl)-4-phenyl-1-naphthamide (1g) (61.2 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)₂ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/DCM/EA = 50/110/1, v/v/v) yields 4f (57.2 mg, 75%) as a white solid. ¹H NMR (400 MHz, CDCl₃): δ = 1.53 (s, 9H), 5.87 (bs, 1H), 7.37-7.43 (m, 2H), 7.47-7.52 (m, 2H), 7.70-7.74 (m, 3H), 7.88 (dd, J = 8.8, 1.6 Hz, 1H), 8.33 (d, J = 9.6 Hz, 1H), 8.47 (d, J = 1.6 Hz, 1H) ppm. ¹³C NMR (100 MHz, CDCl₃): δ = 29.0, 52.4, 123.7, 124.8, 125.1, 127.5, 127.6, 128.0, 128.2, 128.9, 129.1, 131.4, 131.7, 136.1, 140.4, 168.6 ppm. The analytical data matched those reported in the literature.[1]

5-Bromo-N-(tert-butyl)-7-phenyl-1-naphthamide (4g)

Following the general procedure, the reaction of 5-bromo-N-(tert-butyl)-1-naphthamide (1h) (61.0 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)₂ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/DCM/EA = 50/110/1, v/v/v) yields 4g (57.2 mg, 75%) as a white solid. ¹H NMR (400 MHz, CDCl₃): δ = 1.54 (s, 9H), 5.87 (bs, 1H), 7.05-7.10 (m, 1H), 7.38-7.43 (m, 1H), 7.47-7.54 (m, 3H), 7.70-7.73 (m, 2H), 7.84 (dd, J = 8.8, 1.6 Hz, 1H), 8.19 (d, J = 8.8 Hz, 1H), 8.52 (s, 1H) ppm. ¹³C NMR (100 MHz, CDCl₃): δ = 29.1, 52.3, 108.4 (d, J_{CF} = 21 Hz), 121.5 (d, J_{CF} = 5 Hz), 123.0, 123.1, 123.5 (d, J_{CF} = 2 Hz), 125.4 (d, J_{CF} = 9 Hz), 126.6 (d, J_{CF} = 2 Hz), 127.7, 128.0, 129.1, 132.3 (d, J_{CF} = 4 Hz), 132.4 (d, J_{CF} = 5 Hz), 140.7, 159.7 (d, J_{CF} = 254 Hz), 168.6 ppm. The analytical data matched those reported in the literature.[1]
mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 4g (51.1 mg, 67%) as colorless oil. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 1.54 (s, 9H), 5.84 (bs, 1H), 7.40 (t, $J$ = 7.2 Hz, 1H), 7.46-7.57 (m, 3H), 7.59-7.71 (m, 3H), 8.11 (s, 1H), 8.32 (d, $J$ = 8.4 Hz, 1H), 8.45 (s, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 29.1, 52.4, 123.3, 123.7, 125.7, 126.3, 127.5, 128.1, 129.1, 129.2, 130.2, 131.3, 131.6, 136.7, 139.7, 140.2, 168.8 ppm. HRMS (ESI): calcld for C$_{21}$H$_{21}$BrNO [M+H]$^+$ 382.0801, 384.0781, found 382.0809, 384.0782.

**N-({tert-Butyl})-2-methyl-7-phenyl-1-naphthamide (4h)**

Following the general procedure, the reaction of N-({tert-butyl})-2-methyl-1-naphthamide (1i) (48.2 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 4h (53.9 mg, 85%) as a white solid. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 1.56 (s, 9H), 2.53 (s, 3H), 5.71 (bs, 1H), 7.30 (d, $J$ = 8.4 Hz, 1H), 7.36-7.40 (m, 1H), 7.46-7.51 (m, 2H), 7.68-7.73 (m, 3H), 7.77 (d, $J$ = 8.4 Hz, 1H), 7.87 (d, $J$ = 8.4 Hz, 1H), 8.10 (s, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 19.5, 29.1, 52.3, 122.6, 125.2, 127.5, 127.6, 128.4, 128.57, 128.62, 129.1, 130.5, 131.0, 132.2, 135.2, 139.4, 141.2, 169.3 ppm. The analytical data matched those reported in the literature.$[^1]$  

**N-({tert-Butyl})-2-methoxy-7-phenyl-1-naphthamide (4i)**

Following the general procedure, the reaction of N-({tert-butyl})-2-methoxy-1-naphthamide (1j) (51.4 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography
on silica gel (PE/THF = 15/1, v/v) yields 4i (53.3 mg, 80%) as a white solid. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 1.55 (s, 9H), 3.97 (s, 3H), 5.80 (bs, 1H), 7.25 (d, $J$ = 8.8 Hz, 1H), 7.35-7.40 (m, 1H), 7.45-7.50 (m, 2H), 7.63 (dd, $J$ = 8.6, 1.6 Hz, 1H), 7.69-7.72 (m, 2H), 7.84 (d, $J$ = 5.6 Hz, 1H), 7.86 (d, $J$ = 6.4 Hz, 1H), 8.14 (s, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 29.1, 52.2, 57.0, 113.5, 122.2, 122.4, 124.0, 127.5, 127.6, 128.1, 128.5, 129.0, 130.5, 131.8, 140.0, 141.2, 153.7, 167.0 ppm. The analytical data matched those reported in the literature.$^{[1]}$

2,2-Dimethyl-1-(7-phenyl)naphthalen-1-yl)propan-1-one (4j)

Following the general procedure, the reaction of $N$-(tert-butyl)-1,2-dihydroacenaphthylene-5-carboxamide (1k) (50.6 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 4j (34.9 mg, 53%) as a white solid. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 1.54 (s, 9H), 3.40-3.49 (m, 4H), 5.89 (bs, 1H), 7.24 (dt, $J$ = 7.2, 1.2 Hz, 1H), 7.35-7.40 (m, 1H), 7.45-7.50 (m, 2H), 7.57 (d, $J$ = 1.2 Hz, 1H), 7.64 (d, $J$ = 7.2 Hz, 1H), 7.69-7.72 (m, 2H), 8.31 (d, $J$ = 1.2 Hz, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 29.2, 30.5, 30.6, 52.0, 118.5, 119.8, 120.1, 127.4, 127.8, 128.0, 128.9, 131.0, 139.0, 142.3, 142.5, 146.9, 149.0, 168.7 ppm. HRMS (ESI): calcd for C$_{23}$H$_{24}$NO$_3$ [M+H]$^+$ 330.1852, found 330.1759.

(E)-Methyl 3-(5-(tert-butylcarbamoyl)-3-phenyl)naphthalen-1-yl)acrylate (4k)

Following the general procedure, the reaction of (E)-methyl 3-(5-(tert-butylcarbamoyl)naphthalen-1-yl)acrylate (1l) (62.2 mg, 0.20 mmol),
mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)₂ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/DCM/EA = 20/20/1, v/v/v) yields 4k (54.2 mg, 70%) as colorless oil. ¹H NMR (400 MHz, CDCl₃): δ = 1.55 (s, 9H), 3.87 (s, 3H), 5.87 (bs, 1H), 6.59 (d, J = 16.0 Hz, 1H), 7.39-7.43 (m, 1H), 7.47-7.55 (m, 3H), 7.59-7.62 (m, 1H), 7.69-7.73 (m, 2H), 8.02 (d, J = 1.6 Hz, 1H), 8.23 (d, J = 8.4 Hz, 1H), 8.53 (d, J = 15.6), 8.54 (s, 1H) ppm. ¹³C NMR (100 MHz, CDCl₃): δ = 29.1, 52.0, 52.4, 121.5, 125.2, 125.3, 125.4, 125.7, 125.82, 127.6, 128.0, 129.2, 130.87, 130.89, 132.8, 137.0, 139.2, 140.5, 142.0, 167.3, 169.1 ppm. HRMS (ESI): calcd for C₂₅H₂₆NO₃ [M+H]⁺, 388.1907, found 388.1906.

N-(tert-Butyl)-7-phenyl-5-(phenylethynyl)-1-naphthamide (4l)

Following the general procedure, the reaction of N-(tert-butyl)-5-(phenylethynyl)-1-naphthamide (1m) (65.4 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)₂ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 4l (48.4 mg, 60%) as colorless oil. ¹H NMR (400 MHz, CDCl₃): δ = 1.55 (s, 9H), 5.88 (bs, 1H), 7.37-7.44 (m, 4H), 7.47-7.52 (m, 2H), 7.52-7.57 (m, 1H), 7.62 (dd, J = 6.8, 1.2 Hz, 1H), 7.65-7.69 (m, 2H), 7.72-7.76 (m, 2H), 8.08 (d, J = 1.6 Hz, 1H), 8.49-8.53 (m, 2H) ppm. ¹³C NMR (100 MHz, CDCl₃): δ = 29.1, 52.3, 87.5, 94.8, 122.0, 123.3, 124.1, 125.5, 125.7, 127.6, 127.9, 128.3, 128.6, 128.7, 129.1, 130.50, 130.54, 131.8, 132.7, 136.6, 139.2, 140.4, 169.1 ppm. HRMS (ESI): calcd for C₂₉H₂₆NO [M+H]⁺ 404.2009, found 404.2016.
N-(tert-Butyl)-7-phenylphenanthrene-9-carboxamide (4m)

Following the general procedure, the reaction of N-(tert-butyl)phenanthrene-9-carboxamide (1n) (55.4 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)₂ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 4m (52.4 mg, 74%) as a white solid. ¹H NMR (400 MHz, CDCl₃): δ = 1.58 (s, 9H), 5.97 (bs, 1H), 7.38-7.42 (m, 1H), 7.48-7.53 (m, 2H), 7.60-7.65 (m, 1H), 7.68-7.73 (m, 1H), 7.74-7.78 (m, 2H), 7.83 (s, 1H), 8.53 (d, J = 1.8 Hz, 1H), 8.67 (d, J = 7.8 Hz, 1H), 8.75 (d, J = 8.6 Hz, 1H) ppm. ¹³C NMR (100 MHz, CDCl₃): δ = 29.1, 52.3, 122.8, 123.6, 124.4, 126.1, 126.4, 127.2, 127.5, 127.7, 127.9, 129.08, 129.14, 129.2, 129.8, 130.6, 130.8, 135.1, 139.8, 140.9, 169.3 ppm. HRMS (ESI): calcd for C₂₅H₂₃NNaO₃ [M+Na]⁺ 376.1672, found 376.1679.

N-(tert-Butyl)-2-phenylpyrene-1-carboxamide (4n)

Following the general procedure, the reaction of N-(tert-butyl)pyrene-1-carboxamide (1o) (60.2 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)₂ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 6c (49.0 mg, 65%) as a white solid. ¹H NMR (400 MHz, CDCl₃): δ = 1.57 (s, 9H), 5.96 (bs, 1H), 7.48-7.53 (m, 1H), 7.54-7.59 (m, 2H), 7.65-7.69 (m, 2H), 7.98 (t, J = 8.0 Hz, 1H), 8.06-8.09 (m, 2H), 8.13-8.16 (m, 2H), 8.22-8.26 (m, 2H), 8.50 (s, 1H) ppm. ¹³C NMR (100 MHz, CDCl₃): δ = 29.2, 52.4, 124.4, 124.5, 124.7, 124.8, 124.97, 124.99,
N-(tert-Butyl)-5-phenylfluoranthene-3-carboxamide (4o)

Following the general procedure, the reaction of N-(tert-butyl)fluoranthene-3-carboxamide (1p) (60.2 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 4o (36.2 mg, 48%) as a yellow solid. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 1.57 (s, 9H), 6.02 (bs, 1H), 7.38-7.45 (m, 3H), 7.50-7.55 (m, 2H), 7.75-7.79 (m, 3H), 7.82 (d, $J$ = 7.2 Hz, 1H), 7.86-7.89 (m, 1H), 7.90-7.93 (m, 1H), 8.14 (d, $J$ = 1.2 Hz, 1H), 8.48 (d, $J$ = 1.2 Hz, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 29.2, 52.3, 119.0, 120.8, 121.8, 122.1, 124.0, 127.61, 127.6 2, 127.7, 127.97, 128.01, 128.4, 129.0, 132.2, 134.8, 137.7, 139.10, 139.12, 140.0, 142.0, 142.7, 168.2 ppm. HRMS (ESI): calcd for C$_{27}$H$_{24}$NO $[M+H]^+$ 378.1852, found 378.1858.

N-Methyl-7-phenyl-1-naphthamide (4p)

Following the general procedure, the reaction of N-methyl-1-naphthamide (1q) (37.0 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 4p (35.0 mg, 67%) as a white solid. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 3.09 (d, $J$ = 4.8 Hz, 3H), 6.07 (bs,
1H), 7.36-7.40 (m, 1H), 7.41-7.45 (m, 1H), 7.45-7.50 (m, 2H), 7.59 (dd, \( J = 7.2, 1.2 \) Hz, 1H), 7.71-7.74 (m, 2H), 7.79 (dd, \( J = 8.4, 2.0 \) Hz, 1H), 7.90-7.94 (m, 2H), 8.51 (s, 1H) ppm. \(^{13}\)C NMR (100 MHz, CDCl\(_3\)): \( \delta = 27.1, 123.6, 124.8, 125.4, 126.3, 127.7, 127.7, 128.9, 129.0, 130.45, 130.53, 133.0, 134.8, 139.9, 141.0, 170.4 \) ppm. The analytical data matched those reported in the literature.[1]

\[ \text{NHCy} \]
\[ \text{O} \]
\[ \text{Ph} \]
\[ \text{N} \]
\[ \text{Cyclohexyl-7-phenyl-1-naphthamide (4q)} \]

Following the general procedure, the reaction of \( N \)-cyclohexyl-1-naphthamide (1r) (50.6 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)\(_2\) (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 20/1, v/v) yields 4q (55.3 mg, 84%) as a white solid. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \( \delta = 1.14-1.32 \) (m, 3H), 1.41-1.53 (m, 2H), 1.64-1.71 (m, 1H), 1.73-1.81 (m, 2H), 2.08-2.16 (m, 2H), 4.07-4.16 (m, 1H), 5.92 (d, \( J = 8.4 \) Hz, 1H), 7.36-7.41 (m, 1H), 7.42-7.51 (m, 3H), 7.60 (dd, \( J = 6.8, 1.2 \) Hz, 1H), 7.71-7.75 (m, 2H), 7.79 (dd, \( J = 8.4, 1.6 \) Hz, 1H), 7.92 (t, \( J = 7.6 \) Hz, 2H), 8.53 (s, 1H) ppm. \(^{13}\)C NMR (100 MHz, CDCl\(_3\)): \( \delta = 25.0, 25.7, 33.4, 48.9, 123.5, 124.9, 125.3, 126.2, 127.66, 127.68, 128.9, 129.0, 130.3, 130.5, 133.0, 133.5, 139.8, 141.0, 168.8 \) ppm. The analytical data matched those reported in the literature.[1]

\[ \text{1-(7-Phenylnaphtalen-1-yl)ethanone (4r)} \]

Following the general procedure, the reaction of 1-(naphthalen-1-yl)ethanone (1s) (34.0 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)\(_2\) (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 40/1, v/v) yields 4r (21.1 mg, 43%) as a yellow oil. \(^1\)H NMR (400 MHz, CDCl\(_3\)): \( \delta = 2.78 \) (s, 3H), 7.37-7.42 (m, 1H), 7.47-7.53 (m, 3H), 7.74-7.77 (m, 2H), 7.82 (dd, \( J = 8.4, 1.6 \) Hz, 1H), 7.95 (d, \( J = 8.4 \) Hz, 1H), 8.52 (s, 1H) ppm. \(^{13}\)C NMR (100 MHz, CDCl\(_3\)): \( \delta = 25.0, 25.7, 33.4, 48.9, 123.5, 124.9, 125.5, 126.2, 127.66, 127.68, 128.9, 129.0, 130.3, 130.5, 133.0, 133.5, 139.8, 141.0, 168.8 \) ppm. The analytical data matched those reported in the literature.[1]
Hz, 1H), 7.98 (dd, J = 7.2, 1.2 Hz, 1H), 8.02 (d, J = 8.0 Hz, 1H), 9.03 (t, J = 0.8 Hz, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 30.2, 124.2, 124.5, 126.2, 127.7, 127.8, 128.99, 129.04, 129.4, 130.6, 133.0, 133.3, 135.6, 140.8, 141.1, 202.0 ppm. HRMS (ESI): caled for C$_{18}$H$_{15}$O [M+H]$^+$ 247.1117, found 247.1124.

2,2-Dimethyl-1-(7-phenylnaphthalen-1-yl)propan-1-one (4s)

Following the general procedure, the reaction of 2,2-dimethyl-1-(naphthalen-1-yl)propan-1-one (1t) (42.4 mg, 0.20 mmol), mesityl(phenyl)iodonium triflate (2a) (141.3 mg, 0.30 mmol), Cu(OTf)$_2$ (7.2 mg, 10 mol%), in DCE (1 mL) at 70 °C. After 24 h, purification by column chromatography on silica gel (PE/THF = 60/1, v/v) yields 4s (33.4 mg, 58%) as yellow oil. $^1$H NMR (400 MHz, CDCl$_3$): $\delta$ = 1.35 (s, 9H), 7.36-7.41 (m, 2H), 7.50 (t, J = 1.2 Hz, 3H), 7.64-7.67 (m, 2H), 7.76 (dd, J = 8.4, 1.6 Hz, 1H), 7.79 (t, J = 0.8 Hz, 1H), 7.89 (d, J = 8.4 Hz, 1H), 7.94 (d, J = 8.4 Hz, 1H) ppm. $^{13}$C NMR (100 MHz, CDCl$_3$): $\delta$ = 27.5, 45.7, 122.9, 123.5, 124.4, 126.2, 127.6, 127.7, 128.9, 129.1, 130.3, 132.9, 139.2, 139.6, 141.0, 214.8 ppm. HRMS (ESI): caled for C$_{21}$H$_{20}$NaO [M+Na]$^+$ 311.1406, found 311.1411.

VI. Photophysical data

Table S2. Photophysical data of 4k, 4n and 4o in toluene (1×10^{-5} mol/L) at 298 K.

<table>
<thead>
<tr>
<th>Compound</th>
<th>$\lambda_{abs}^a$ (nm)</th>
<th>$\lambda_{em}^b$ (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4k</td>
<td>322</td>
<td>395</td>
</tr>
<tr>
<td>4n</td>
<td>335/350</td>
<td>390</td>
</tr>
<tr>
<td>4o</td>
<td>351/370</td>
<td>477</td>
</tr>
</tbody>
</table>

$^a$UV-visible absorption peaks tested in toluene (1×10^{-5} mol/L). $^b$Emission peaks tested in toluene (1×10^{-5} mol/L).
VII. References.


VIII. Copies of $^1$H and $^{13}$C NMR spectra

$^1$H and $^{13}$C NMR Spectra of substrates
$^1$H and $^{13}$C NMR Spectra of Products