SUPPORTING INFORMATION

Palladium catalyzed direct arylation of furans *via* C-H functionalisation at low catalyst loadings.

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General. All reactions were run under argon using vacuum lines in Schlenk tubes in oven-dried glassware. The reactions were followed by GC. ¹H (300 MHz), ¹³C (75 MHz) spectra were recorded in CDCl₃ solutions. Chemical shift (δ) are reported in ppm relative to CDCl₃ (¹H: 7.25 and ¹³C: 77.0). Flash chromatography was performed on silica gel (230-400 mesh).

Preparation of the Pd-Tedicyp Catalyst. An over-dried 40-mL Schlenk tube equipped with a magnetic stirring bar under argon atmosphere, was charged with [Pd(η^3 -C₃H₅)Cl]₂ (36.6 mg, 100 μ mol) and Tedicyp (172.5 mg, 200 μ mol), then, 20 mL of anhydrous DMF were added and the solution was stirred at room temperature for ten minutes. This catalyst

solution was used directly for the catalyzed reactions. ^{31}P NMR (162 MHz, CDCl_3) $\delta = 25$ (w = 80 Hz), 19.4 (w = 110 Hz).

Representative procedure for palladium-catalysed couplings of furans.

In a typical experiment, the aryl bromide (1 mmol), furan derivative (2 mmol) and AcONa (2 mmol) were dissolved in DMAc (3 mL) under an argon atmosphere. The prepared Pd-Tedicyp catalyst complex was then transferred to the reaction flask via cannula. The reaction mixture was stirred at 150 °C for 20 h. The solution was diluted with H_2O (5 ml), then the product was extracted with CH_2Cl_2 . The combined organic layer was dried over MgSO_4 and the solvent was removed in vacuo. The crude product was purified by silica gel column chromatography.

1-[4-(5-Butylfuran-2-yl)-phenyl]-ethanone (1) This compound was prepared according to representative procedure with 4-bromoacetophenone (0.199 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 218 mg, 90% yield. White solid mp 44 °C. ^1H NMR (300 MHz, CDCl_3): $\delta = 0.95$ (t, $J = 7.4$ Hz, 3 H), 1.41 (sext., $J = 7.4$ Hz, 2 H), 1.68 (quint., $J = 7.4$ Hz, 2 H), 2.59 (s, 3 H), 2.69 (t, $J = 7.4$ Hz, 3 H), 6.09 (d, $J = 3.2$ Hz, 1 H), 6.70 (d, $J = 3.2$ Hz, 1 H), 7.67 (d, $J = 8.6$ Hz, 2 H), 7.93 (d, $J = 8.6$ Hz, 2 H). ^{13}C NMR (75 MHz, CDCl_3): $\delta = 13.8, 22.3, 26.5, 27.9, 30.1, 107.4, 108.4, 122.9, 128.9, 134.9, 135.3, 150.9, 158.0, 197.3$. Anal. Calcd for $\text{C}_{16}\text{H}_{18}\text{O}_2$: C, 79.31; H, 7.49. Found: C, 79.47; H, 7.31. IR: 2998, 2870, 1679 cm^{-1} .

[4-(5-Butylfuran-2-yl)-phenyl]-phenyl-methanone (2) This compound was prepared according to representative procedure with 4-bromobenzophenone (0.261 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 277 mg, 91% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 0.95 (t, J = 7.4 Hz, 3 H), 1.41 (sext., J = 7.4 Hz, 2 H), 1.69 (quint., J = 7.4 Hz, 2 H), 2.70 (t, J = 7.4 Hz, 3 H), 6.11 (d, J = 3.2 Hz, 1 H), 6.70 (d, J = 3.2 Hz, 1 H), 7.48 (t, J = 7.6 Hz, 2 H), 7.58 (t, J = 7.6 Hz, 1 H), 7.71 (d, J = 8.3 Hz, 2 H), 7.79 (d, J = 8.3 Hz, 2 H), 7.82 (d, J = 7.6 Hz, 2 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.8, 22.3, 27.9, 30.1, 107.4, 108.3, 122.7, 128.2, 129.9, 130.8, 132.1, 134.8, 135.2, 137.9, 151.0, 158.0, 196.0. Anal. Calcd for $\text{C}_{21}\text{H}_{20}\text{O}_2$: C, 82.86; H, 6.62. Found: C, 83.00; H, 6.47. IR: 2998, 2870, 1660 cm^{-1} .

4-(5-Butylfuran-2-yl)-benzaldehyde (3) This compound was prepared according to representative procedure with 4-bromobenzaldehyde (0.185 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 208 mg, 91% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 0.95 (t, J = 7.4 Hz, 3 H), 1.43 (sext., J = 7.4 Hz, 2 H), 1.68 (quint., J = 7.4 Hz, 2 H), 2.70 (t, J = 7.4 Hz, 3 H), 6.11 (d, J = 3.2 Hz, 1 H), 6.73 (d, J = 3.2 Hz, 1 H), 7.74 (d, J = 8.3 Hz, 2 H), 7.85 (d, J = 8.3 Hz, 2 H), 9.96 (s, 1 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.8, 22.3, 27.9, 30.1, 107.7, 109.2, 123.3, 130.3, 134.4, 136.5, 150.7, 158.4, 191.5. Anal. Calcd for $\text{C}_{15}\text{H}_{16}\text{O}_2$: C, 78.92; H, 7.06. Found: C, 78.72; H, 7.31. IR: 2998, 2870, 1670 cm^{-1} .

4-(5-Butylfuran-2-yl)-benzoic acid methyl ester (4) This compound was prepared according to representative procedure with methyl 4-bromobenzoate (0.215 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.004 mmol) in 237 mg, 92% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 0.95 (t, J = 7.4 Hz, 3 H), 1.42 (sext., J = 7.4 Hz, 2 H), 1.68 (quint., J = 7.4 Hz, 2 H), 2.69 (t, J = 7.4 Hz, 3 H), 3.91 (s, 3 H), 6.08 (d, J = 3.2 Hz, 1 H), 6.67 (d, J = 3.2 Hz, 1 H), 7.66 (d, J = 8.3 Hz, 2 H), 8.01 (d, J = 8.3 Hz, 2 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.8, 22.2, 27.9, 30.1, 52.0, 107.4, 108.1, 122.8, 127.8, 130.0, 135.1, 151.0, 157.8,

166.9. Anal. Calcd for C₁₆H₁₈O₃: C, 74.39; H, 7.02. Found: C, 74.45; H, 7.18. IR: 2998, 2870, 1710 cm⁻¹.

4-(5-Butylfuran-2-yl)-benzonitrile (5) This compound was prepared according to representative procedure with 4-bromobenzonitrile (0.182 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 203 mg, 90% yield. White solid mp 58-59 °C.

¹H NMR (300 MHz, CDCl₃): δ = 0.95 (t, *J* = 7.4 Hz, 3 H), 1.41 (sext., *J* = 7.4 Hz, 2 H), 1.67 (quint., *J* = 7.4 Hz, 2 H), 2.69 (t, *J* = 7.4 Hz, 3 H), 6.11 (d, *J* = 3.2 Hz, 1 H), 6.70 (d, *J* = 3.2 Hz, 1 H), 7.61 (d, *J* = 8.6 Hz, 2 H), 7.68 (d, *J* = 8.6 Hz, 2 H). ¹³C NMR (75 MHz, CDCl₃): δ = 13.8, 22.2, 27.9, 30.1, 107.6, 109.1, 109.4, 119.1, 123.3, 132.5, 135.0, 150.1, 158.5. Anal. Calcd for C₁₅H₁₅NO: C, 79.97; H, 6.71. Found: C, 79.79; H, 6.87. IR: 2988, 2870, 2224 cm⁻¹.

2-Butyl-5-(4-nitrophenyl)-furan (6) This compound was prepared according to representative procedure with 4-bromonitrobenzene (0.202 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.001 mmol) in 201 mg, 82% yield. White solid mp 39-40 °C.

¹H NMR (300 MHz, CDCl₃): δ = 0.95 (t, *J* = 7.4 Hz, 3 H), 1.41 (sext., *J* = 7.4 Hz, 2 H), 1.70 (quint., *J* = 7.4 Hz, 2 H), 2.71 (t, *J* = 7.4 Hz, 3 H), 6.14 (d, *J* = 3.2 Hz, 1 H), 6.77 (d, *J* = 3.2 Hz, 1 H), 7.72 (d, *J* = 8.6 Hz, 2 H), 8.21 (d, *J* = 8.6 Hz, 2 H). ¹³C NMR (75 MHz, CDCl₃): δ = 13.8, 22.3, 27.9, 30.1, 107.9, 110.1, 123.2, 124.3 (2C), 136.8, 149.9, 159.1. Anal. Calcd for C₁₄H₁₅NO₃: C, 68.56; H, 6.16. Found: C, 68.70; H, 6.07. IR: 2967, 2875 cm⁻¹.

2-Butyl-5-(4-fluorophenyl)-furan (7) This compound was prepared according to representative procedure with 4-bromofluorobenzene (0.175 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 201 mg, 92% yield as an oil.

¹H NMR (300 MHz, CDCl₃): δ = 0.94 (t, *J* = 7.4 Hz, 3 H), 1.41 (sext., *J* = 7.4 Hz, 2 H), 1.68 (quint., *J* = 7.4 Hz, 2 H), 2.67 (t, *J* = 7.4 Hz, 3 H), 6.03 (d, *J* = 3.2 Hz, 1 H), 6.46 (d, *J* = 3.2 Hz, 1 H), 7.04 (t, *J* = 8.7 Hz, 2 H), 7.68 (dd, *J* = 8.7 and 5.2 Hz, 2 H). ¹³C NMR (75 MHz, CDCl₃): δ = 13.8, 22.3, 27.8, 30.2, 105.2, 106.8, 115.5 (d, *J* = 21.9 Hz), 124.9 (d, *J* = 7.7 Hz), 127.7, 151.2, 156.4, 161.9 (d, *J* = 245.9 Hz). Anal. Calcd for C₁₄H₁₅FO: C, 77.04; H, 6.93. Found: C, 77.21; H, 6.78. IR: 2964 cm⁻¹.

2-Butyl-5-*p*-tolylfuran (8) This compound was prepared according to representative procedure with 4-bromotoluene (0.171 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 191 mg, 89% yield as an oil.

¹H NMR (300 MHz, CDCl₃): δ = 0.94 (t, *J* = 7.4 Hz, 3 H), 1.41 (sext., *J* = 7.4 Hz, 2 H), 1.67 (quint., *J* = 7.4 Hz, 2 H), 2.34 (s, 3 H), 2.67 (t, *J* = 7.4 Hz, 3 H), 6.02 (d, *J* = 3.2 Hz, 1 H), 6.46 (d, *J* = 3.2 Hz, 1 H), 7.14 (d, *J* = 8.0 Hz, 2 H), 7.51 (d, *J* = 8.3 Hz, 2 H). ¹³C NMR (75 MHz, CDCl₃): δ = 13.8, 21.2, 22.3, 27.9, 30.2, 104.8, 106.6, 123.3, 128.6, 129.2, 136.4, 152.3, 156.0. Anal. Calcd for C₁₅H₁₈O: C, 84.07; H, 8.47. Found: C, 84.20; H, 8.47. IR: 2988, 2870, 1141 cm⁻¹.

2-Butyl-5-(4-methoxyphenyl)-furan (9)¹ This compound was prepared according to representative procedure with 4-bromoanisole (0.187 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 193 mg, 84% yield.

¹H NMR (300 MHz, CDCl₃): δ = 0.94 (t, *J* = 7.4 Hz, 3 H), 1.40 (sext., *J* = 7.4 Hz, 2 H), 1.66 (quint., *J* = 7.4 Hz, 2 H), 2.66 (t, *J* = 7.4 Hz, 3 H), 3.82 (s, 3 H), 6.02 (d, *J* = 3.2 Hz, 1 H), 6.39 (d, *J* = 3.2 Hz, 1 H), 6.88 (d, *J* = 8.0 Hz, 2 H), 7.55 (d, *J* = 8.3 Hz, 2 H).

1-[3-(5-Butylfuran-2-yl)-phenyl]-ethanone (10) This compound was prepared according to representative procedure with 3-bromoacetophenone (0.199 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.001 mmol) in 220 mg, 91% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 0.95 (t, J = 7.4 Hz, 3 H), 1.41 (sext., J = 7.4 Hz, 2 H), 1.68 (quint., J = 7.4 Hz, 2 H), 2.63 (s, 3 H), 2.69 (t, J = 7.4 Hz, 3 H), 6.07 (d, J = 3.2 Hz, 1 H), 6.62 (d, J = 3.2 Hz, 1 H), 7.44 (t, J = 7.6 Hz, 1 H), 7.77 (d, J = 8.2 Hz, 1 H), 7.80 (d, J = 8.2 Hz, 1 H), 8.18 (t, J = 1.9 Hz, 1 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.8, 22.3, 26.7, 27.9, 30.1, 106.7, 107.0, 122.9, 126.4, 127.6, 128.8, 131.7, 137.5, 151.0, 157.1, 198.1. Anal. Calcd for $\text{C}_{16}\text{H}_{18}\text{O}_2$: C, 79.31; H, 7.49. Found: C, 79.40; H, 7.41. IR: 2966, 2871, 1687 cm^{-1} .

3-(5-Butylfuran-2-yl)-benzaldehyde (11) This compound was prepared according to representative procedure with 3-bromobenzaldehyde (0.185 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.001 mmol) in 206 mg, 90% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 0.95 (t, J = 7.4 Hz, 3 H), 1.41 (sext., J = 7.4 Hz, 2 H), 1.68 (quint., J = 7.4 Hz, 2 H), 2.69 (t, J = 7.4 Hz, 3 H), 6.08 (d, J = 3.2 Hz, 1 H), 6.64 (d, J = 3.2 Hz, 1 H), 7.51 (t, J = 7.6 Hz, 1 H), 7.71 (d, J = 8.2 Hz, 1 H), 7.85 (d, J = 8.2 Hz, 1 H), 8.11 (t, J = 1.7 Hz, 1 H), 10.04 (s, 1 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.8, 22.3, 27.9, 30.1, 107.0, 107.1, 124.2, 127.7, 128.9, 129.3, 132.1, 136.8, 150.6, 157.3, 192.3. Anal. Calcd for $\text{C}_{15}\text{H}_{16}\text{O}_2$: C, 78.92; H, 7.06. Found: C, 78.97; H, 7.01. IR: 2978, 2870, 1702 cm^{-1} .

2-Butyl-5-(2-trifluoromethylphenyl)-furan (12) This compound was prepared according to representative procedure with 2-bromobenzotrifluoride (0.225 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 247 mg, 92% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 0.94 (t, J = 7.4 Hz, 3 H), 1.40 (sext., J = 7.4 Hz, 2 H), 1.68 (quint., J = 7.4 Hz, 2 H), 2.68 (t, J = 7.4 Hz, 3 H), 6.09 (d, J = 3.2 Hz, 1 H), 6.60 (d, J = 3.2 Hz, 1

H), 7.35 (t, $J = 7.6$ Hz, 1 H), 7.54 (t, $J = 7.5$ Hz, 1 H), 7.71 (d, $J = 8.2$ Hz, 1 H), 7.73 (d, $J = 8.2$ Hz, 1 H). ^{13}C NMR (75 MHz, CDCl_3): $\delta = 13.8, 22.2, 27.8, 30.0, 106.9, 110.8$ (q, $J = 4.0$ Hz), 124.2 (q, $J = 274.3$ Hz), 126.1 (q, $J = 29.6$ Hz), 126.5 (q, $J = 5.5$ Hz), 127.0, 129.4, 130.1, 131.6, 148.6, 157.4. Anal. Calcd for $\text{C}_{15}\text{H}_{15}\text{F}_3\text{O}$: C, 67.16; H, 5.64. Found: C, 66.99; H, 5.67. IR: 2988, 2870, 1141 cm^{-1} .

2-Butyl-5-naphthalen-1-ylfuran (13) This compound was prepared according to representative procedure with 1-bromonaphthalene (0.207 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.004 mmol) in 200 mg, 80% yield as an oil.

^1H NMR (300 MHz, CDCl_3): $\delta = 0.98$ (t, $J = 7.4$ Hz, 3 H), 1.48 (sext., $J = 7.4$ Hz, 2 H), 1.76 (quint., $J = 7.4$ Hz, 2 H), 2.76 (t, $J = 7.4$ Hz, 3 H), 6.17 (d, $J = 3.2$ Hz, 1 H), 6.62 (d, $J = 3.2$ Hz, 1 H), 7.45-7.55 (m, 3 H), 7.71 (d, $J = 8.2$ Hz, 1 H), 7.80 (d, $J = 8.2$ Hz, 1 H), 7.88 (d, $J = 8.1$ Hz, 1 H), 8.43 (d, $J = 8.2$ Hz, 1 H). ^{13}C NMR (75 MHz, CDCl_3): $\delta = 13.8, 22.3, 27.9, 30.3, 106.8, 109.9, 125.3, 125.6, 125.7, 125.8, 126.3, 128.0, 128.4, 129.0, 130.2, 134.0, 151.5, 156.7$. Anal. Calcd for $\text{C}_{18}\text{H}_{18}\text{O}$: C, 86.36; H, 7.25. Found: C, 86.47; H, 7.47. IR: 2988, 2870, 1141 cm^{-1} .

2-Butyl-5-(2,4,6-trimethylphenyl)-furan (14) This compound was prepared according to representative procedure with 4-bromomesitylene (0.199 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyp complex (0.02 mmol) in 138 mg, 57% yield as an oil.

^1H NMR (300 MHz, CDCl_3): $\delta = 0.92$ (t, $J = 7.4$ Hz, 3 H), 1.37 (sext., $J = 7.4$ Hz, 2 H), 1.66 (quint., $J = 7.4$ Hz, 2 H), 2.18 (s, 6 H), 2.29 (s, 3 H), 2.64 (t, $J = 7.4$ Hz, 3 H), 6.05 (d, $J = 3.2$ Hz, 1 H), 6.11 (d, $J = 3.2$ Hz, 1 H), 6.90 (s, 2 H). ^{13}C NMR (75 MHz, CDCl_3): $\delta = 13.8, 20.6, 21.0, 22.2, 27.7, 30.4, 105.3, 109.5, 128.2, 128.6, 137.9, 138.1, 150.2, 155.4$. Anal. Calcd for $\text{C}_{17}\text{H}_{22}\text{O}$: C, 84.25; H, 9.15. Found: C, 83.98; H, 9.18. IR: 2988, 2870, 1141 cm^{-1} .

2-Anthracen-9-yl-5-butylfuran (15) This compound was prepared according to representative procedure with 9-bromoanthracene (0.257 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyclopentadiene complex (0.01 mmol) in 222 mg, 74% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 0.97 (t, J = 7.4 Hz, 3 H), 1.49 (sext., J = 7.4 Hz, 2 H), 1.75 (quint., J = 7.4 Hz, 2 H), 2.79 (t, J = 7.4 Hz, 3 H), 6.29 (d, J = 3.2 Hz, 1 H), 6.56 (d, J = 3.2 Hz, 1 H), 7.45 (m, 4 H), 8.00 (m, 4 H), 8.49 (s, 1 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.8, 22.3, 27.9, 30.4, 106.0, 112.8, 125.1, 125.9, 126.2, 126.4, 128.1, 128.3, 131.4, 131.5, 148.4, 157.1. Anal. Calcd for $\text{C}_{22}\text{H}_{20}\text{O}$: C, 87.96; H, 6.71. Found: C, 88.04; H, 6.90. IR: 2988, 2870, 1141 cm^{-1} .

2-Butyl-5-(2,4,6-triisopropylphenyl)-furan (16) This compound was prepared according to representative procedure with 2,4,6-triisopropylbromobenzene (0.283 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyclopentadiene complex (0.02 mmol) in 137 mg, 42% yield. White solid mp 40 $^{\circ}\text{C}$.

^1H NMR (300 MHz, CDCl_3): δ = 0.94 (t, J = 7.4 Hz, 3 H), 1.16 (d, J = 7.2 Hz, 12 H), 1.27 (d, J = 7.2 Hz, 6 H), 1.35 (sext., J = 7.4 Hz, 2 H), 1.66 (quint., J = 7.4 Hz, 2 H), 2.71 (t, J = 7.4 Hz, 3 H), 2.78 (sept, J = 7.2 Hz, 2 H), 2.89 (sept, J = 7.2 Hz, 1 H), 6.04 (d, J = 3.2 Hz, 1 H), 6.11 (d, J = 3.2 Hz, 1 H), 7.03 (s, 2 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.8, 22.1, 24.0, 24.3, 27.8, 30.3, 30.7, 34.5, 105.3, 109.6, 120.6, 127.2, 149.5, 149.7, 149.9, 155.4. Anal. Calcd for $\text{C}_{23}\text{H}_{34}\text{O}$: C, 84.60; H, 10.50. Found: C, 84.54; H, 10.19. IR: 2988, 2869, 1701, 1141 cm^{-1} .

3-(5-Butylfuran-2-yl)-pyridine (17) This compound was prepared according to representative procedure with 3-bromopyridine (0.158 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyclopentadiene complex (0.004 mmol) in 175 mg, 87% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 0.91 (t, J = 7.4 Hz, 3 H), 1.42 (sext., J = 7.4 Hz, 2 H), 1.67 (quint., J = 7.4 Hz, 2 H), 2.68 (t, J = 7.4 Hz, 3 H), 6.07 (d, J = 3.2 Hz, 1 H), 6.62 (d, J = 3.2 Hz, 1

H), 7.25 (m, 1 H), 7.85 (d, $J = 7.4$ Hz, 1 H), 8.49 (m, 1 H), 8.88 (m, 1 H). ^{13}C NMR (75 MHz, CDCl_3): $\delta = 13.8, 22.3, 27.9, 30.4, 107.1, 107.2, 123.4, 127.2, 130.2, 145.0, 147.5, 149.1, 157.6$. Anal. Calcd for $\text{C}_{13}\text{H}_{15}\text{NO}$: C, 77.58; H, 7.51. Found: C, 77.50; H, 7.71. IR: 2980, 2870, 1141 cm^{-1} .

3-(5-Butylfuran-2-yl)-quinoline (18) This compound was prepared according to representative procedure with 3-bromoquinoline (0.208 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyclopentadiene complex (0.004 mmol) in 221 mg, 88% yield as an oil.

^1H NMR (300 MHz, CDCl_3): $\delta = 0.96$ (t, $J = 7.4$ Hz, 3 H), 1.43 (sext., $J = 7.4$ Hz, 2 H), 1.71 (quint., $J = 7.4$ Hz, 2 H), 2.73 (t, $J = 7.4$ Hz, 3 H), 6.13 (d, $J = 3.2$ Hz, 1 H), 6.75 (d, $J = 3.2$ Hz, 1 H), 7.53 (t, $J = 7.5$ Hz, 1 H), 7.61 (t, $J = 7.5$ Hz, 1 H), 7.81 (d, $J = 8.2$ Hz, 1 H), 8.06 (d, $J = 8.2$ Hz, 1 H), 8.28 (d, $J = 2.1$ Hz, 1 H), 9.16 (s, 1 H). ^{13}C NMR (75 MHz, CDCl_3): $\delta = 13.8, 22.3, 27.9, 30.1, 107.2, 107.5, 124.4, 127.0, 127.8, 128.0, 128.1, 128.8, 129.3, 146.8, 147.0, 149.5, 157.8$. Anal. Calcd for $\text{C}_{17}\text{H}_{17}\text{NO}$: C, 81.24; H, 6.82. Found: C, 81.52; H, 6.99. IR: 2998, 2870, 1141 cm^{-1} .

4-(5-Butylfuran-2-yl)-isoquinoline (19) This compound was prepared according to representative procedure with 4-bromoisoquinoline (0.208 g, 1 mmol), 2-*n*-butylfuran (0.248 g, 2 mmol) and the Pd/Tedicyclopentadiene complex (0.01 mmol) in 166 mg, 66% yield as an oil.

^1H NMR (300 MHz, CDCl_3): $\delta = 0.97$ (t, $J = 7.4$ Hz, 3 H), 1.44 (sext., $J = 7.4$ Hz, 2 H), 1.75 (quint., $J = 7.4$ Hz, 2 H), 2.77 (t, $J = 7.4$ Hz, 3 H), 6.19 (d, $J = 3.3$ Hz, 1 H), 6.70 (d, $J = 3.3$ Hz, 1 H), 7.63 (t, $J = 7.5$ Hz, 1 H), 7.74 (t, $J = 7.5$ Hz, 1 H), 7.99 (d, $J = 8.1$ Hz, 1 H), 8.43 (d, $J = 8.1$ Hz, 1 H), 8.75 (s, 1 H), 9.16 (s, 1 H). ^{13}C NMR (75 MHz, CDCl_3): $\delta = 13.8, 22.3, 27.9, 30.2, 106.9, 110.8, 124.6, 124.8, 127.2, 128.1, 128.5, 130.8, 132.4, 141.6, 149.1, 151.6, 157.8$. Anal. Calcd for $\text{C}_{17}\text{H}_{17}\text{NO}$: C, 81.24; H, 6.82. Found: C, 81.20; H, 6.74. IR: 2990, 2870 cm^{-1} .

5-(4-Acetylphenyl)-2-methylfuran-3-carboxylic acid ethyl ester (20) This compound was prepared according to representative procedure with 4-bromoacetophenone (0.199 g, 1 mmol), 2-methylfuran-3-carboxylic acid ethyl ester (0.308 g, 2 mmol) and the Pd/Tedicyp complex (0.001 mmol) in 239 mg, 88% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 1.37 (t, J = 7.5 Hz, 3 H), 2.60 (s, 3 H), 2.66 (s, 3 H), 4.31 (q, J = 7.5 Hz, 1 H), 7.03 (s, 1 H), 7.70 (d, J = 8.5 Hz, 2 H), 7.98 (d, J = 8.5 Hz, 2 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.0, 13.3, 25.5, 59.3, 108.0, 115.9, 123.4, 128.9, 134.1, 135.8, 150.5, 159.7, 163.7, 197.2. Anal. Calcd for $\text{C}_{16}\text{H}_{16}\text{O}_4$: C, 70.57; H, 5.92. Found: C, 70.51; H, 5.81. IR: 2985, 2870, 1700 cm^{-1} .

5-(4-Cyanophenyl)-2-methylfuran-3-carboxylic acid ethyl ester (21) This compound was prepared according to representative procedure with 4-bromobenzonitrile (0.182 g, 1 mmol), 2-methylfuran-3-carboxylic acid ethyl ester (0.308 g, 2 mmol) and the Pd/Tedicyp complex (0.001 mmol) in 230 mg, 90% yield. White solid mp 171 °C.

^1H NMR (300 MHz, CDCl_3): δ = 1.37 (t, J = 7.5 Hz, 3 H), 2.66 (s, 3 H), 4.31 (q, J = 7.5 Hz, 1 H), 7.04 (s, 1 H), 7.65 (d, J = 8.5 Hz, 2 H), 7.71 (d, J = 8.5 Hz, 2 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.9, 14.3, 60.4, 108.7, 110.6, 116.0, 118.7, 123.7, 132.6, 133.9, 149.6, 160.1, 163.5. Anal. Calcd for $\text{C}_{15}\text{H}_{13}\text{NO}_4$: C, 70.58; H, 5.13. Found: C, 70.41; H, 5.01. IR: 2988, 2870, 2224, 1718 cm^{-1} .

5-(4-*tert*-Butylphenyl)-2-methylfuran-3-carboxylic acid ethyl ester (22) This compound was prepared according to representative procedure with 4-*tert*-butylbromobenzene (0.213 g, 1 mmol), 2-methylfuran-3-carboxylic acid ethyl ester (0.308 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 260 mg, 91% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 1.33 (s, 9 H), 1.37 (t, J = 7.5 Hz, 3 H), 2.64 (s, 3 H), 4.31 (q, J = 7.5 Hz, 1 H), 6.83 (s, 1 H), 7.39 (d, J = 8.4 Hz, 2 H), 7.56 (d, J = 8.4 Hz, 2 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.9, 14.3, 31.2, 34.6, 60.1, 104.8, 115.3, 123.4, 125.6, 127.4, 150.7, 151.9, 158.3, 164.1. Anal. Calcd for $\text{C}_{18}\text{H}_{22}\text{O}_3$: C, 75.50; H, 7.74. Found: C, 75.67; H, 7.75. IR: 2988, 2870, 1715 cm^{-1} .

5-(4-Methoxyphenyl)-2-methylfuran-3-carboxylic acid ethyl ester (23) This compound was prepared according to representative procedure with 4-bromoanisole (0.187 g, 1 mmol), 2-methylfuran-3-carboxylic acid ethyl ester (0.308 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 219 mg, 84% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 1.36 (t, J = 7.5 Hz, 3 H), 2.62 (s, 3 H), 3.82 (s, 3 H), 4.30 (q, J = 7.5 Hz, 1 H), 6.73 (s, 1 H), 6.91 (d, J = 8.5 Hz, 2 H), 7.55 (d, J = 8.5 Hz, 2 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.8, 14.3, 55.3, 60.1, 103.8, 114.1, 115.2, 123.1, 125.1, 151.7, 157.9, 159.2, 164.2. Anal. Calcd for $\text{C}_{15}\text{H}_{16}\text{O}_4$: C, 69.22; H, 6.20. Found: C, 68.97; H, 6.34. IR: 2988, 2870, 1710 cm^{-1} .

2-Methyl-5-phenylfuran-3-carboxylic acid ethyl ester (24) This compound was prepared according to representative procedure with iodobenzene (0.204 g, 1 mmol), 2-methylfuran-3-carboxylic acid ethyl ester (0.308 g, 2 mmol) and the Pd/Tedicyp complex (0.0001 mmol) in 200 mg, 87% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 1.37 (t, J = 7.5 Hz, 3 H), 2.64 (s, 3 H), 4.31 (q, J = 7.5 Hz, 1 H), 6.88 (s, 1 H), 7.26 (t, J = 7.5 Hz, 1 H), 7.37 (t, J = 7.5 Hz, 2 H), 7.64 (d, J = 8.5 Hz, 2 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 13.9, 14.3, 60.2, 105.5, 115.4, 123.6, 127.6, 128.7, 130.1, 151.7, 158.6, 164.1. Anal. Calcd for $\text{C}_{14}\text{H}_{14}\text{O}_3$: C, 73.03; H, 6.13. Found: C, 73.14; H, 6.18. IR: 2988, 2870, 1714 cm^{-1} .

Acetic acid 5-(4-nitrophenyl)-furan-2-ylmethyl ester (25)² This compound was prepared according to representative procedure with 4-bromonitrobenzene (0.202 g, 1 mmol), furfuryl acetate (0.280 g, 2 mmol) and the Pd/Tedicyp complex (0.001 mmol) in 217 mg, 83% yield. ¹H NMR (300 MHz, CDCl₃): δ = 2.11 (s, 3 H), 5.12 (s, 2 H), 6.55 (d, J = 3.2 Hz, 1 H), 6.83 (d, J = 3.2 Hz, 1 H), 7.79 (d, J = 8.7 Hz, 2 H), 8.24 (d, J = 8.7 Hz, 2 H).

Acetic acid 5-(4-fluorophenyl)-furan-2-ylmethyl ester (26) This compound was prepared according to representative procedure with 4-bromofluorobenzene (0.175 g, 1 mmol), furfuryl acetate (0.280 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 208 mg, 89% yield as an oil.

¹H NMR (300 MHz, CDCl₃): δ = 2.09 (s, 3 H), 5.09 (s, 2 H), 6.46 (d, J = 3.2 Hz, 1 H), 6.53 (d, J = 3.2 Hz, 1 H), 7.07 (t, J = 8.7 Hz, 2 H), 7.63 (dd, J = 8.7 and 5.3 Hz, 2 H). ¹³C NMR (75 MHz, CDCl₃): δ = 20.9, 58.2, 105.4, 112.8, 115.7 (d, J = 21.8 Hz), 125.7 (d, J = 8.0 Hz), 126.8, 148.9, 153.8, 162.3 (d, J = 248.8 Hz), 170.6. Anal. Calcd for C₁₃H₁₁FO₃: C, 66.66; H, 4.73. Found: C, 66.41; H, 4.90. IR: 2987, 2901, 1725 cm⁻¹.

Acetic acid 5-(4-methoxyphenyl)-furan-2-ylmethyl ester (27)² This compound was prepared according to representative procedure with 4-bromoanisole (0.187 g, 1 mmol), furfuryl acetate (0.280 g, 2 mmol) and the Pd/Tedicyp complex (0.01 mmol) in 172 mg, 70% yield. ¹H NMR (300 MHz, CDCl₃): δ = 2.09 (s, 3 H), 3.83 (s, 3 H), 5.08 (s, 2 H), 6.45 (d, J = 3.4 Hz, 1 H), 6.46 (d, J = 3.4 Hz, 1 H), 6.91 (d, J = 8.5 Hz, 2 H), 7.59 (d, J = 8.5 Hz, 2 H).

2-(4-Methoxyphenyl)-furan-3-carbaldehyde (28) This compound was prepared according to representative procedure with 4-bromoanisole (0.187 g, 1 mmol), 3-furaldehyde (0.192 g, 2 mmol) and the Pd/Tedicyclopentadiene complex (0.01 mmol) in 150 mg, 74% yield as an oil.

^1H NMR (300 MHz, CDCl_3): δ = 3.87 (s, 3 H), 6.86 (d, J = 1.9 Hz, 1 H), 7.01 (d, J = 8.8 Hz, 2 H), 7.41 (d, J = 1.9 Hz, 1 H), 7.68 (d, J = 8.8 Hz, 2 H), 10.07 (s, 1 H). ^{13}C NMR (75 MHz, CDCl_3): δ = 55.4, 109.4, 114.5, 121.6, 122.0, 129.6, 142.1, 161.2, 161.8, 185.7. IR: 2985, 2892, 1765 cm^{-1} . Anal. Calcd for $\text{C}_{12}\text{H}_{10}\text{O}_3$: C, 71.28; H, 4.98. Found: C, 71.01; H, 5.08. Before purification 10% of **5-(4-Methoxyphenyl)-furan-3-carbaldehyde** were also observed ^1H NMR (300 MHz, CDCl_3): δ = 3.85 (s, 3 H), 6.97 (d, J = 8.8 Hz, 2 H), 7.13 (s, 1 H), 7.30 (d, J = 8.8 Hz, 2 H), 8.03 (s, 1 H), 9.97 (s, 1 H).

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