Supporting Information I

Synthesis of Polysubstituted Quinolines *via* Transition-Metal-Free Oxidative Cycloisomerization of *o*-Cinnamylanilines

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I. Experimental Details and Compound Characterization Data

1. General information

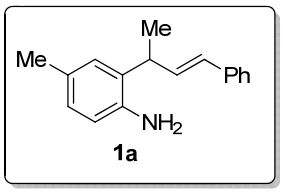
All reagents and solvents were used as supplied commercially. Analytical thin-layer chromatography (TLC) was performed on 0.2 mm coated Science silica gel (EM 60-F254) plates purchased from Merck, Germany. Visualization was accomplished with UV light (254 nm) and exposure to either ethanolic phosphomolybdic acid (PMA), anisaldehyde or $KMnO_4$, $CeSO_4$ + ammonium phosphomolybdate + 10 % H_2SO_4, ninhydrine solution followed by heating. Melting points are uncorrected. ^1H NMR spectra were acquired on a 400 MHz spectrometer and chemical shifts are reported relative to the residual solvent peak. ^{13}C NMR spectra were acquired on a 100 MHz spectrometer and chemical shifts are reported in ppm relative to the residual solvent peak. Unless noted, NMR spectra were acquired in $CDCl_3$; individual peaks are reported as: multiplicity, integration, coupling constant in Hz. All IR spectra were obtained as neat films with a Perkin-Elmer Model 2000 FT-IR and selected absorbances are reported in cm^{-1}. Low resolution (LR) and High-resolution (HR) mass spectrometry data were acquired by the Central Instrumentation Facility, Indian Institute of Science Education and Research Bhopal on a Bruker Daltonics MicroTOF-Q-II (quadrupole) Mass Spectrometer using CH_3CN/H_2O as solvent.

2. Preparation of starting materials

2.1 Preparation of *o*-cinnamylanilines:

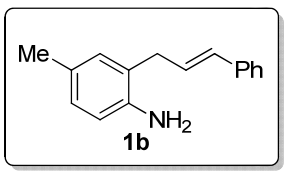
General procedure A: Following a reported procedure,[1,2] to a stirred solution of alcohol (0.5 mmol) and aniline (0.6 mmol) in CH_3CN (2.0 mL), taken in a round-bottomed flask was added Re_2O_7 (1.5 or 5 mol %) and refluxed until the complete consumption of starting materials was observed (TLC). Then the reaction mixture was extracted with brine solution (2 mL), and EtOAc (3 × 10 mL). The combined organic layer was dried over anhydrous $MgSO_4$ and the solvent removed under vacuum. Then the crude residue was purified by flash column chromatography (EtOAc/n-Hexane) on silica gel.

2.1.1 (*E*)-4-Methyl-2-(4-phenylbut-3-en-2-yl)aniline (1a):



Yield: 93 mg, 78%; R_f = 0.34 (10:90 = EtOAc/n-Hexane); Light brown liquid ; **FT-IR (neat):** 3426, 3359, 3015, 1629, 1512, 1425, 1278, 976, 871, 763, 678 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ 7.37 – 7.35 (2H), 7.29 (m, 2H), 7.22 – 7.19 (1H), 6.98 (s, 1H), 6.89 (dd, *J* = 8.0, 4.0 Hz, 1H), 6.60 (d, *J* = 8.0 Hz, 1H), 6.45 (d, *J* = 16 Hz, 1H), 6.34 (dd, *J* = 16.0, 4.0 Hz, 1H), 3.69 – 3.61 (m, 1H), 3.34 (bs, 2H), 2.28 (s, 3H), 1.49 (d, *J* = 8.0 Hz, 3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ 141.6, 137.2, 134.2, 129.3, 128.9, 128.5, 128.3, 127.76, 127.73, 127.2, 126.1, 116.5, 37.5, 20.7, 19.3; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{17}H_{20}N$: 238.1596; found: 238.1584.

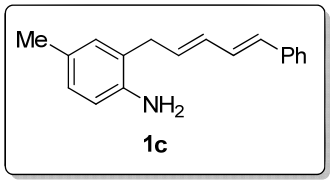
2.1.2 2-Cinnamyl-4-methylaniline (1b):



Yield: 85 mg, 76%; R_f = 0.31 (10:90 = EtOAc/n-Hexane); Yellow liquid; **FT-IR (neat):** 3458, 3372, 3017, 2876, 1616, 1603, 1484, 1426, 1393, 1285, 1235, 1151, 968, 836, 762 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 7.36 – 7.34 (2H), 7.31 – 7.27 (2H), 7.22 (m, 1H), 6.91 (m, 2H), 6.62 (d, *J* = 8.0 Hz, 1H), 6.46 (d, *J* = 16.0 Hz, 1H), 6.34 (m, 1H), 3.57 (s, 2H), 3.44

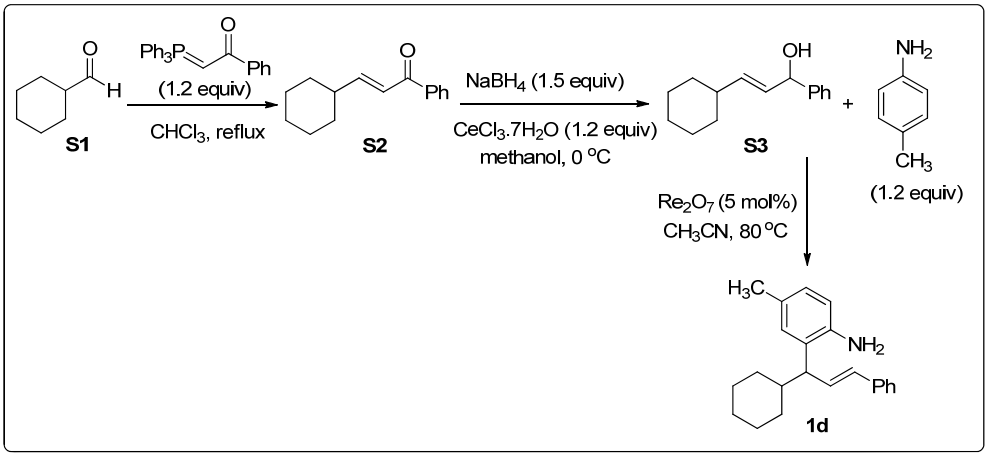
(d, *J* = 6.0 Hz, 2H), 2.26 (s, 3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 142.3, 137.2, 131.1, 130.8, 128.5, 128.2, 128.1, 127.9, 127.2, 126.2, 124.3, 116.1, 35.6, 20.5; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{16}H_{18}N$: 224.1439; found: 224.1435.

2.1.3 4-Methyl-2-((2E,4E)-5-phenylpenta-2,4-dien-1-yl)aniline (1c):



Yield: 84 mg, 67%; R_f = 0.27 (10:90 = EtOAc/n-Hexane); Yellow liquid ; **FT-IR (neat):** 3473, 3379, 3056, 3022, 2919, 1946, 1613, 1574, 1502, 1492, 1438, 1421, 1393, 1309, 1258, 1152, 1124, 1036, 1014, 965, 863, 814, 764 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 7.38 – 7.36 (2H), 7.32 – 7.28 (m, 2H), 7.22 (m, 1H), 6.90 (m, 2H), 6.79 (dd, *J* = 12.0, 4.0 Hz, 1H), 6.62 (d, *J* = 8.0 Hz, 1H), 6.47 (d, *J* = 16.0 Hz, 1H), 6.26 (dd, *J* = 12.0, 4.0 Hz, 1H), 5.98 – 5.91 (m, 1H), 3.54 (bs, 2H), 3.38 (d, *J* = 8.0 Hz, 2H), 2.26 (s, 3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 142.2, 137.4, 132.2, 131.7, 131.2, 130.8, 128.7, 128.6, 128.2, 128.1, 127.3, 126.2, 124.3, 116.1, 35.4, 20.5; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{18}H_{20}N$: 250.1596; found: 250.1578.

2.2. Preparation of 1d:



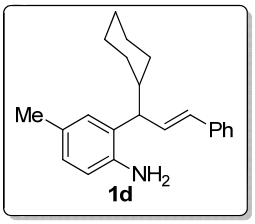
General procedure B: Following a modified procedure,[3] a 25 mL round bottomed flask was charged with cyclohexanecarbaldehyde (**S1**) (0.500 g, 4.46 mmol), (benzoylmethylene)triphenylphosphorane (2.03 g, 5.35 mmol), and 20 mL $CHCl_3$ and

refluxed overnight. Then the reaction mixture was cooled to ambient temperature and concentrated under reduced pressure to which n-hexane was added and stirred vigorously until a white precipitate formed. Then the reaction mixture was filtered using a sintered funnel and further washed with CH_2Cl_2 (10 mL). The obtained filtrate was then extracted with brine, dried over anhydrous $MgSO_4$ and the solvent removed under reduced pressure. The resulting crude residue was purified by flash column chromatography (EtOAc/n-Hexane) on silica gel to provide **S2** (0.700 g, 73 % yield) as a colourless oil.

General procedure C: Following a reported procedure,[4] to a stirred solution of $CeCl_3.7H_2O$ (0.671 g, 1.8 mmol) and **S2** (0.321 g, 1.5 mmol) in MeOH (10 mL) at 0 °C added sodium borohydride (86 mg, 2.25 mmol) portion wise and the reaction mixture was further stirred for 15 min at rt. Then the reaction mixture was adjusted to pH 7 using a 10% HCl solution and extracted three times with Et_2O. The combined organic layers washed with brine followed by drying over anhydrous $MgSO_4$. Then the solvent was removed under reduced pressure and the crude residue was purified by flash column chromatography (EtOAc/n-Hexane) on silica gel to provide **S3** (0.303 g, 93 %) as a colourless liquid.

1d was synthesized following the above mentioned general procedure **A.**

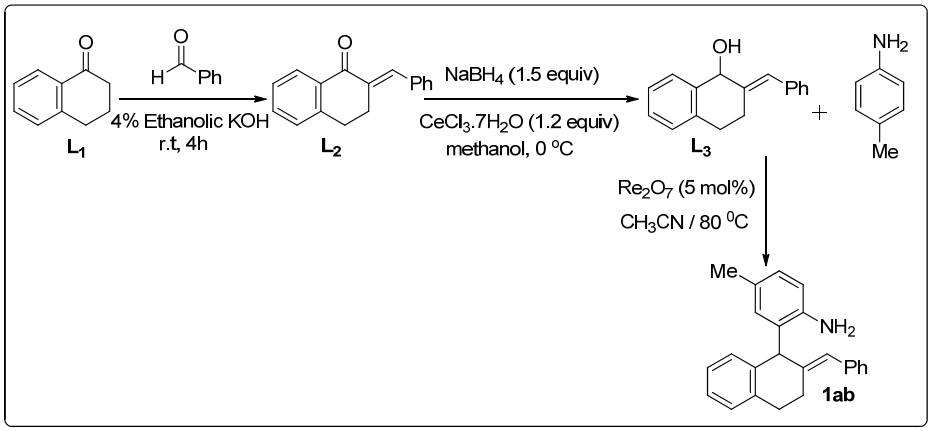
2.2.1 (*E*)-2-(1-Cyclohexyl-3-phenylallyl)-4-methylaniline (1d):



Yield: 96 mg, 63%; R_f = 0.32 (10:90 = EtOAc/n-Hexane); brown liquid ; **FT-IR (neat):** 3436, 3356, 2910, 2949, 2354, 2301, 1612, 1461, 1289, 1284, 1107, 974, 815, 756, 685 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 7.34 – 7.32 (2H), 7.28 – 7.24 (m, 2H), 7.21– 7.15 (m, 1H), 6.94 (s, 1H), 6.82 (d, *J* = 8.0 Hz, 1H), 6.60 (d, *J* = 8.0 Hz, 1H), 6.39 (d, *J* = 12.0 Hz, 1H), 6.29 (dd, *J* = 16.0, 8.0 Hz, 1H), 3.50 (bs, 2H), 3.14 (t, *J* = 8.0 Hz, 1H), 2.26 (s, 3H), 1.99 (d, *J* = 16.0 Hz, 1H), 1.77 – 1.74 (2H), 1.66 – 1.62 (3H), 1.29 – 1.27 (2H), 1.06 (m, 1H), 1.02 (dd, *J* = 11.7, 3.0 Hz, 1H), 0.90 – 0.88 (1H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 141.7, 137.4, 132.2, 130.2, 128.5, 128.4, 128.3, 128.3, 127.2, 127.0, 126.2, 116.8, 50.2, 41.1, 31.8, 31.6,

26.6, 26.5, 26.4, 20.8; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{22}H_{28}N$: 306.2222; found: 306.2203.

2.3. Preparation of 1ab:



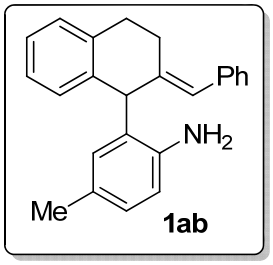
1ab was synthesized using following procedure.

General procedure D: Following a modified procedure,[5] a 25 mL round bottomed flask was charged with 3,4-dihydronaphthalen-1(2*H*)-one (**L_1**) (0.500 g, 3.42 mmol), benzaldehyde (0.363 g, 3.42 mmol), and 4 % ethanol in KOH added dropwise in the flask and allowed to stirred at room temperature for 4 hr. After the completed of reaction a white precipitate was formed. The solids were filtered through the Buckner funnel and washed with 10 mL cold ethanol and kept at high vacuum pump for dry. The solvent was removed under reduced pressure and the crude residue was purified by flash column chromatography (EtOAc/n-Hexane) on silica gel to provide **L_2** (0.671 g, 84 % yield) as a white solid.

General procedure E: Following a reported procedure,[4] $CeCl_3.7H_2O$ (0.671 g, 1.8 mmol) was taken in MeOH (10 mL) in a 25 mL round bottomed flask. **L_2** (0.351 g, 1.5 mmol) was added under stirring at 0 °C. Sodium borohydride (86 mg, 2.25 mmol) was added portion wise, and then the reaction mixture was stirred for another 15 min at rt. Then the reaction mixture was adjusted to pH 7 using a 10 % HCl solution and extracted three times with Et_2O. Combined organic layers were washed with brine followed by drying over anhydrous $MgSO_4$. The solvent was removed under reduced pressure and the crude residue was purified by flash column chromatography (EtOAc/n-Hexane) on silica gel to provide **L_3** (0.310 g, 87 %) as a light brown liquid.

1ab was synthesized using the above mentioned general procedure **A.**

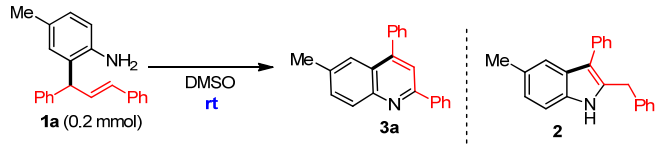
2.3.1 (*E*)-2-(2-Benzylidene-1,2,3,4-tetrahydronaphthalen-1-yl)-4-methylaniline (1ab):



Yield: 106 mg, 65%; R_f = 0.33 (05:95 = EtOAc/n-Hexane); light brown liquid ; **FT-IR (neat):** 3413, 3056, 2911, 2801, 1588, 1563, 1548, 1490, 1449, 1409, 1358, 1195, 1028, 940, 883, 861 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 7.38 – 7.34 (2H), 7.31 – 7.26 (3H), 7.14 – 7.13 (3H), 6.94 (m, 2H), 6.82 (s, 1H), 6.65 (d, *J* = 8.0 Hz, 1H), 6.01 (s, 1H), 4.86 (s, 1H), 3.45 (bs, 2H), 2.91 – 2.86 (m, 2H), 2.37 – 2.31 (2H), 2.23 (s, 3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 142.6, 142.2, 140.9, 134.7, 134.5, 130.1, 129.7, 128.5, 128.09, 128.06, 127.5, 127.3, 126.8, 126.8, 126.5, 126.2, 125.7, 116.6, 53.6, 28.9, 28.3, 20.8; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{24}H_{24}N$: 326.1909; found: 326.1912.

3. Optimization of the reaction conditions

Table 1. Optimization of the reaction conditions[a]

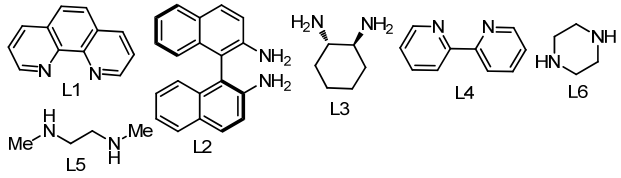


entry	Base (0.5 equiv)	Ligand	Solvent	**3a** (%)[b]
1	Carbonates[c]	-	DMSO	-
2	LiOH	-	DMSO	-
3	NaOH	-	DMSO	22
4	KOH	-	DMSO	25
5	NaH	-	DMSO	58
6	KO^{t}Bu	-	DMSO	83
7	KO^{t}Bu	-	DMF	53
8	KO^{t}Bu	-	1,4-dioxane	-

9	KO^{t}Bu	-	Et_2O	16
10	KO^{t}Bu	-	THF	12
11	KO^{t}Bu	-	MeOH	-
12	KO^{t}Bu	-	EtOAc	12
13	KO^{t}Bu	-	CH_2Cl_2	-
14	KO^{t}Bu	L1	DMSO	79
15	KO^{t}Bu	L2	DMSO	80
16	KO^{t}Bu	L3	DMSO	77
17	KO^{t}Bu	L4	DMSO	78
18	KO^{t}Bu	L5	DMSO	77
19	KO^{t}Bu	L6	DMSO	75

[a] The reaction was carried out with **1a** (0.2 mmol), K^{t}OBu (0.5 equiv), 4 h, 1 mL solvent, under argon atmosphere. [b] The conversions are isolated yields. [c] Carbonates such as Na_2CO_3, K_2CO_3, Cs_2CO_3 are used.

Ligands:



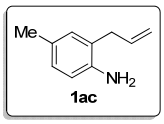
4. Transition-Metal-Free cyclization

4.1 General procedure for the oxidative cycloisomerization: *o*-Cinnamylaniline **1** (0.20 mmol) and K^{t}OBu (0.5-1.5 equiv) in DMSO (0.5 mL) was taken in a round bottomed flask (2 mL). The flask containing the reaction mixture was purged with argon for 5 min and allowed to stir at room temperature until the complete consumption of starting material observed by TLC. The reaction mixture was diluted with $NaHCO_3$ (5 mL) followed by washing with ethyl acetate (3 x 10 mL). The organic extract was dried over anhydrous $MgSO_4$. The solvents were removed under reduced pressure to provide the crude product **3** which was purified by flash column chromatography on silica gel using n-hexane/ethyl acetate as eluent.

4.2 General procedure for one-pot protocol: To a stirred solution of alcohol (0.2 mmol) and aniline (0.24 mmol) in CH_3CN (2.0 mL), taken in a round bottomed flask attached to a refluxed condenser, Re_2O_7 (5 mol %) was added. The reaction was stirred at 80 ^oC. After consumption of starting material (followed by TLC analysis), the solvent was removed under reduced pressure. To this reaction mixture, DMSO (0.5 mL) was added and purged with argon for 5 min, K^{t}OBu (1.5 equiv) was added. The reaction mixture was allowed to stir at

room temperature until the complete consumption of starting material observed by TLC. The reaction mixture was diluted with $NaHCO_3$ (5 mL) followed by washing with ethyl acetate (3 x 10 mL). The organic extract was dried over anhydrous $MgSO_4$. The solvents were removed under reduced pressure to provide the crude product **4** which was purified by flash column chromatography on silica-gel using n-hexane/ethyl acetate as eluent.

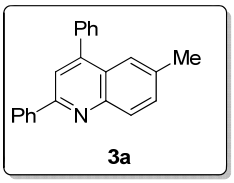
4.3 Preparation of (1ac):[6]



1ac were synthesized using the previously reported method and the characterization data for this compound **1ac** matched with the previously reported data.[6]

5. Characterization of Quinolines

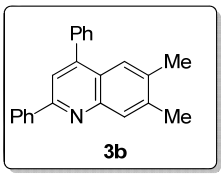
5.1 6-Methyl-2,4-diphenylquinoline (3a; Scheme 3)[7]



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 49 mg, 83%; R_f = 0.34 (05:95 = EtOAc/n-Hexane); Yellow solid; **mp** 120-123°C; **FT-IR (neat):** 3413, 3056, 2911, 2801, 1588, 1563, 1548, 1490, 1449, 1409, 1358, 1195, 1028, 940, 883, 861 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.21 (2H), 8.17 (d, *J* = 8 Hz, 1H), 7.81 (s, 1H), 7.68 (s, 1H), 7.61 (d, *J* = 1.9 Hz, 2H), 7.59 (d, *J* = 4.6 Hz, 3H), 7.57-7.53 (m, 3H), 7.50-7.48 (d, *J* = 7.2 Hz, 1H), 2.51 (s, 3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 156.0, 148.4, 147.4, 139.7, 138.6, 136.3, 131.7, 129.8, 129.5, 129.1, 128.8, 128.5, 128.3, 127.5, 125.7, 124.4, 119.4, 21.8; **LR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{22}H_{18}N$: 296.1; found: 296.2.

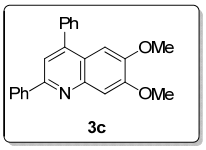
5.2 6,7-Dimethyl-2,4-diphenylquinoline (3b; Scheme 3)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 48.9 mg, 79%; R_f = 0.48 (20:80 = EtOAc/n-Hexane); Brown solid; **mp** 150-152 °C **FT-IR (neat):** 3410, 3050, 2901, 2779, 1636, 1541, 1449, 1389, 1358, 1224, 1134, 1027, 936, 880, 833 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 8.17 (d, *J* = 7.2 Hz, 2H), 8.01 (s, 1H), 7.72 (s, 1H), 7.62 (s, 1H), 7.55 (d, *J* = 4.5 Hz, 4H), 7.51 (m, 3H), 7.43 (m, 1H), 2.49 (s, 3H), 2.38 (s, 3H) ; **^{13}C NMR (100 MHz, CDCl$_3$):** δ, 156.0, 148.1, 148.0, 139.9, 139.7, 138.8, 136.3, 129.5, 129.0, 128.7, 128.5, 128.2, 127.9, 127.4, 124.7, 124.2, 118.6, 20.3, 20.2; **LR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{23}H_{20}N$: 310.15; found: 310.2.

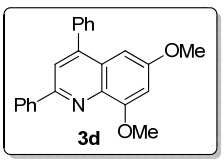
5.3 6,7-Dimethoxy-2,4-diphenylquinoline (3c; Scheme 3):



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 58.7 mg, 86%; R_f = 0.25 (05:95 = EtOAc/n-Hexane); White solid; **mp** 160-162°C; **FT-IR (neat):** 3397, 3015, 2858, 2099, 1849, 1637, 1452, 1360, 1261, 1210, 1153, 905, 761 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 8.20 (d, *J* = 8 Hz, 2H), 7.82 (s, 1H), 7.59 (4H), 7.52 (m, 3H), 7.44 (d, *J* = 4 Hz, 1H), 6.78 (s, 2H), 4.12 (s, 3H), 3.80 (s, 3H); **^{13}C NMR (100 MHz, CDCl$_3$):** δ, 158.1, 156.8, 153.4, 147.8, 139.8, 139.1, 137.4, 129.3, 128.8, 128.7, 128.6, 128.3, 127.4, 127.4, 120.4, 101.2, 95.3, 56.3, 55.4; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{23}H_{20}NO_2$: 342.1494; found: 342.1498.

5.4 6,8-Dimethoxy-2,4-diphenylquinoline (3d; Scheme 3)

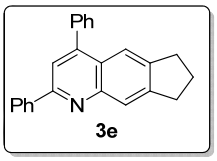


The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 57.5 mg, 84%; R_f = 0.31 (05:95 = EtOAc/n-Hexane); White solid; **mp** 145-148 °C; **FT-IR (neat):** 3389, 3068, 2962, 2916, 1622, 1537, 1499, 1406, 1357, 1328, 1247, 1142, 1093, 939, 752 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 8.13 (d, *J* = 8 Hz, 2H), 7.66 (s, 1H), 7.57 – 7.54 (5H), 7.51-7.47 (m, 3H), 7.42 (t, *J* = 4 Hz, 1H), 7.16 (s, 1H), 4.06 (s, 3H), 3.84 (s,

3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 155.1, 152.4, 149.7, 147.4, 146.0, 139.9, 138.9, 129.3, 128.9, 128.8, 128.7, 128.3, 127.3, 121.1, 117.9, 108.7, 103.3, 56.2, 55.9; **HR-MS (ESI, *m/z*):** $[M+H]^+$calculated for $C_{23}H_{20}NO_2$: 342.1494; found: 342.1499.

5.5 2,4-Diphenyl-7,8-dihydro-6H-cyclopenta[g]quinoline (3e; Scheme 3)

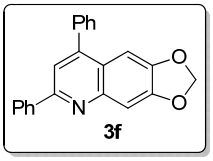


3e

The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 50.8 mg, 79%; R_f = 0.35 (10:90 = EtOAc/n-Hexane); Yellow liquid; **FT-IR (neat):** 3417, 3061, 3421, 3059, 2988, 2845, 2779, 1633, 1588, 1517, 1480, 1389, 1360, 1265, 1024, 936, 878, 830 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.21 (d, *J* = 8.0 Hz, 2H), 8.09 (s, 1H), 7.76 (s, 1H), 7.71 (s, 1H), 7.59 – 7.56 (m, 4H), 7.55-7.53 (3H), 7.79-7.45 (m, 1H), 3.17 (t, *J* = 4.0 Hz, 2H), 3.04 (t, *J* = 4.0 Hz, 2H), 2.19 (q, *J* = 8.0 Hz, 2H).**^{13}C NMR (100 MHz, $CDCl_3$):** δ, 155.7, 148.6, 147.6, 144.2, 139.9, 139.1, 129.6, 129.0, 128.8, 128.5, 128.3, 128.2, 127.5, 124.8, 124.4, 119.5, 118.5, 32.8, 32.7, 26.2; **GC-MS (EI, *m/z*):** $[M]^+$ calculated for $C_{24}H_{19}N$: 321.1517; found: 321.1521.

5.6 6,8-Diphenyl-[1,3]dioxolo[4,5-g]quinoline (3f; Scheme 3)

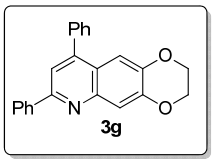


3f

The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 55.4 mg, 85%; R_f = 0.30 (10:90 = EtOAc/n-Hexane); White solid; **mp** 70-72°C; **FT-IR (neat):** 3385, 2954, 2706, 1653, 1425, 1378, 1286, 1123, 1042, 854, 763 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.13 (d, *J* = 4.0 Hz, 2H), 7.66 (s, 1H), 7.53 – 7.50 (m, 5H), 7.49 (d, *J* = 8.0 Hz, 3H), 7.42 (m, 1H), 7.14 (s, 1H), 6.05 (s, 2H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 154.9, 150.5, 148.1, 147.9, 147.2, 139.7, 138.9, 129.4, 128.9, 128.8, 128.6, 128.3, 127.3, 122.6, 117.8, 106.4, 101.7, 101.1; **GC-MS (EI, *m/z*):** $[M+H]^+$ calculated for $C_{22}H_{16}NO_2$: 326.1181; found: 326.1178.

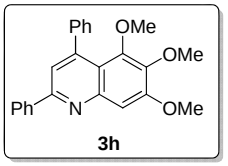
5.7 7,9-Diphenyl-2,3-dihydro-[1,4]dioxino[2,3-g]quinoline (3g; Scheme 3)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 59 mg, 87%; R_f = 0.42 (05:95 = EtOAc/n-Hexane); Yellow solid; **mp** 73-75°C; **FT-IR (neat):** 3257, 3083, 2858, 2909, 2087, 1644, 1496, 1281, 1237, 1197, 1059, 875, 755 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.13 (d, *J* = 8.0 Hz, 2H), 7.66 (d, *J* = 12.0 Hz, 2H), 7.52 (d, *J* = 4.0 Hz, 4H), 7.49 – 7.47 (m, 3H), 7.44 – 7.40 (m, 1H), 7.30 (s, 1H), 4.36 (4H) ; **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 155.6, 147.6, 146.8, 145.5, 144.2, 139.9, 138.7, 129.4, 128.9, 128.7, 128.6, 128.3, 127.4, 121.8, 117.8, 114.8, 110.3, 64.4, 64.4; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{23}H_{18}NO_2$: 340.1338; found: 340.1330.

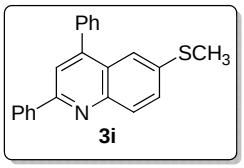
5.8 5,6,7-Trimethoxy-2,4-diphenylquinoline (3h; Scheme 3)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 57.4 mg, 77%; R_f = 0.31 (10:90 = EtOAc/n-Hexane); Brown solid; **mp** 100-102 °C; **FT-IR (neat):** 3407, 2799, 2092, 1638, 1478, 1397, 1246, 1150, 1113, 1033, 991, 903, 758 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.11 (d, *J* = 8.0 Hz, 2H), 7.52 (s, 1H), 7.50 – 7.45 (m, 3H), 7.41 (6H), 4.04 (s, 3H), 3.92 (s, 3H), 3.29 (s, 3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 155.8, 155.7, 148.7, 147.6, 147.2, 142.2, 142.2, 139.5, 129.2, 128.8, 128.4, 127.4, 127.1, 127.0, 119.8, 116.6, 105.5, 61.1, 60.6, 56.1; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{24}H_{22}NO_3$: 372.1600; found: 372.1603.

5.9 6-(Methylthio)-2,4-diphenylquinoline (3i; Scheme 3)

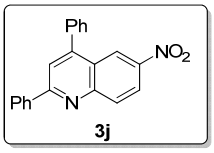


The title compound was prepared using the general procedure for the K^{t}OBu catalyzed

oxidative cycloisomerization.

Yield: 58.4 mg, 89%; R_f = 0.35 (05:95 = EtOAc/n-Hexane); Yellow solid; **mp** 142-145 °C **FT-IR (neat):** 3412, 3068, 3030, 2361, 1603, 1470, 1386, 1293, 1064, 959, 870, 799, 703 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.17 (d, *J* = 8.0 Hz, 2H), 8.13 (d, *J* = 12.0 Hz, 1H), 7.79 (s, 1H), 7.67 (d, *J* = 2.0 Hz, 1H), 7.62 (dd, *J* = 8.0, 4.0, Hz, 1H), 7.55 (4H), 7.53 – 7.49 (m, 3H), 7.45 (m, 1H), 2.46 (s, 3H) ; **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 156.1, 147.8, 147.1, 139.5, 138.3, 137.1, 130.4, 129.5, 129.3, 128.9, 128.8, 128.7, 128.5, 127.4, 126.2, 121.1, 119.9, 15.8 ; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{22}H_{18}NS$: 328.1160; found: 328.1165.

5.10 6-Nitro-2,4-diphenylquinoline (3j; Scheme 3)[9]

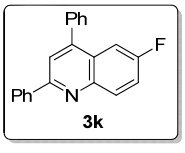


3j

The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 53.2 mg, 81%; R_f = 0.32 (10:90 = EtOAc/n-Hexane); White solid; **mp** 197-200 °C ; **FT-IR (neat):** 3324, 2912, 2753, 2085, 1531, 1457, 1401, 1132, 1116, 1021, 986, 894, 824, 726 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.84 (d, *J* = 2.4 Hz, 1H), 8.47 (dd, *J* = 9.2, 2.5 Hz, 1H), 8.31 (d, *J* = 9.2 Hz, 1H), 8.23 (dd, *J* = 7.9, 1.5 Hz, 2H), 7.96 (s, 1H), 7.56 – 7.51 (8H) ; **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 160.0, 151.3, 151.0, 145.4, 138.5, 136.9, 131.7, 130.4, 129.4, 129.3, 129.1, 129.1, 127.8, 124.8, 123.1, 122.9, 120.7 ; **LR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{21}H_{15}N_2O_2$: 327.1; found: 327.2.

5.11 6-Fluoro-2,4-diphenylquinoline (3k; Scheme 3)



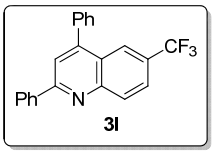
3k

The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 46.7 mg, 78%; R_f = 0.35 (05:95 = EtOAc/n-Hexane); Light Yellow solid; **mp** 76-80 °C ; **FT-IR (neat):** 3365, 3045, 2875, 2023, 1867, 1642, 1509, 1426, 1369, 1215, 1023, 965, 809, 726 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.23 (dd, *J* = 12.0, 4.0 Hz, 1H), 8.17 (d, *J* = 4 Hz, 2H), 7.83 (s, 1H), 7.54 (7H), 7.50 (d, *J* = 2.4 Hz, 2H), 7.47 (m, 1H); **^{13}C NMR (100**

MHz, $CDCl_3$): δ, 161.8, 159.4, 156.3, 148.72 (d, *J* = 5.6 Hz), 145.9, 139.4, 137.9, 132.55 (d, *J* = 9.1 Hz), 129.4, 129.3, 128.85 (d, *J* = 9.0 Hz), 128.6, 127.4, 126.54 (d, *J* = 9.5 Hz), 119.70 (d, *J* = 25.7 Hz), 109.07 (d, *J* = 23.1 Hz); **LR-MS (ESI, *m/z*)**: $[M+H]^+$ calculated for $C_{21}H_{15}FN$: 300.1; found: 300.2.

5.12 2,4-Diphenyl-6-(trifluoromethyl)quinoline (3l; Scheme 3):[10]

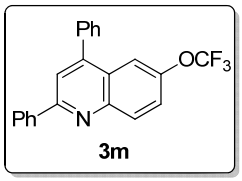


3l

The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 60 mg, 86%; R_f = 0.44 (05:95 = EtOAc/n-Hexane); White Solid; **mp** 148-150 °C ; **FT-IR (neat):** 3410, 2790, 2083, 1636, 1452, 1307, 1156, 1107, 901, 833, 755 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.33 (d, *J* = 8.0 Hz, 1H), 8.22 (d, *J* = 4.0 Hz, 1H), 8.20 (s, 2H), 7.91 – 7.88 (m, 2H), 7.56 (6H), 7.50 (m, 2H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 158.8, 150.1, 149.8, 138.9, 137.4, 131.3, 129.9, 129.5, 128.9, 128.9, (128.5, 128.2, 127.8, 127.5) (q, *J* = 33 Hz, C), 127.7, (125.3, 125.2, 125.2, 125.2) (q, *J* = 3.1 Hz, CH), (128.2, 125.5, 122.8, 120.1) (q, *J* = 272 Hz, C), 124.9, (123.8, 123.7, 123.7, 123.6) (q, *J* = 4.5 Hz, CH), 120.4; **LR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{22}H_{15}F_3N$: 350.1; found: 350.2.

5.13 2,4-Diphenyl-6-(trifluoromethoxy)quinoline (3m; Scheme 3)

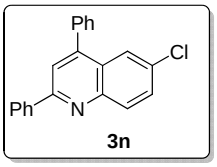


3m

The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 60 mg, 82%; R_f = 0.32 (05:95 = EtOAc/n-Hexane); White Solid; **mp** 130-132 °C; **FT-IR (neat):** 3427, 3019, 2928, 2101, 1644, 1544, 1299, 1262, 1213, 1156, 877, 763 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.27 (d, *J* = 8.0 Hz, 1H), 8.19 – 8.17 (m, 2H), 7.86 (s, 1H), 7.73 (d, *J* = 4.0 Hz, 1H), 7.61 – 7.57 (m, 2H), 7.56 – 7.53 (5H), 7.48 (m, 2H) ; **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 157.4, 149.2, 147.1, 146.9, 139.2, 137.6, 132.2, 129.6, 129.4, 128.9, 128.9, 128.8, 127.6, 126.1, (126.9, 124.4, 121.8, 119.2) (q, *J* = 256 Hz, C), 123.5, 120.1, 116.4; **GC-MS (EI, *m/z*):** $[M]^+$ calculated for $C_{22}H_{14}F_3NO$: 365.1027; found: 365.1027.

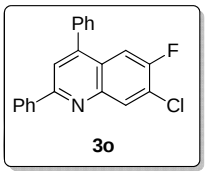
5.14 6-Chloro-2,4-diphenylquinoline (3n; Scheme 3)[8]



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 55 mg, 87%; R_f = 0.32 (20:80 = EtOAc/n-Hexane); White Solid; **mp** 92-95 °C; **FT-IR (neat):** 3323, 2914, 2859, 2092, 1647, 1587, 1517, 1484, 1422, 1357, 1153, 1070, 1024, 936, 859, 886, 770 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 8.18 – 8.15 (m, 3H), 7.86 (d, *J* = 4.0 Hz, 1H), 7.83 (s, 1H), 7.65 (dd, *J* = 8.0, 4.0 Hz, 1H), 7.54 (6H), 7.47 (m, 2H); **^{13}C NMR (100 MHz, CDCl$_3$):** δ, 157.1, 148.5, 147.2, 139.2, 137.7, 132.2, 131.7, 130.4, 129.6, 129.4, 128.9, 128.8, 128.7, 127.5, 126.5, 124.5, 120.1; **LR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{21}H_{15}ClN$: 316.1; found: 316.1.

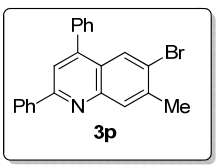
5.15 7-Chloro-6-fluoro-2,4-diphenylquinoline (3o; Scheme 3)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 44.7 mg, 67%; R_f = 0.35 (05:95 = EtOAc/n-Hexane); Light yellow solid; **mp** 135-138 °C; **FT-IR (neat):** 3423, 3059, 2925, 2854, 2363, 1706, 1603, 1495, 1453, 1374, 1289, 1158, 1072, 917, 755 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 8.84 (m, 1H), 8.47 (dd, *J* = 7.7, 1.7 Hz, 1H), 8.45 (s, 1H), 8.32 – 8.30 (2H), 8.24 (1H), 7.96 (7H); **^{13}C NMR (100 MHz, CDCl$_3$):** δ, 160.6 (d, *J* = 247.2 Hz), 156.3 (d, *J* = 2.7 Hz), 148.7 (d, *J* = 5.6 Hz), 145.9 (d, *J* = 0.4 Hz), 139.4, 137.9, 132.5 (d, *J* = 9.1 Hz), 129.4, 129.3, 128.9, 128.8, 128.6, 127.4, 126.5 (d, *J* = 9.5 Hz), 119.9, 119.7 (d, *J* = 25.7 Hz), 109.1 (d, *J* = 23.1 Hz). **HR-MS (APCI, *m/z*):** $[M+H]^+$ calculated for $C_{21}H_{14}ClFN$: 334.0799; found: 344.0795.

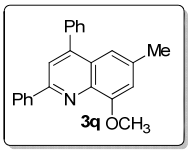
5.16 6-Bromo-7-methyl-2,4-diphenylquinoline (3p; Scheme 3)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 54.6 mg, 73%; R_f = 0.34 (05:95 = EtOAc/n-Hexane); Light yellow liquid; **FT-IR (neat):** 3421, 3334, 3025, 2920, 2801, 2101, 1856, 1644, 1389, 1357, 1263, 1182, 1026, 945, 884, 865, 769 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 8.20 (d, *J* = 8.0 Hz, 2H), 8.06 (s, 1H), 7.81 (d, *J* = 8.0 Hz, 1H), 7.76 (s, 1H), 7.56 – 7.51 (6H), 7.47 (m, 1H), 7.31 (dd, *J* = 8.0, 1.5 Hz, 1H), 2.59 (s, 3H); **^{13}C NMR (100 MHz, CDCl$_3$):** δ, 156.9, 149.1, 148.9, 139.8, 139.8, 138.6, 129.6, 129.3, 129.2, 128.8, 128.6, 128.6, 128.4, 127.6, 125.3, 123.8, 118.6, 21.7; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{22}H_{17}BrN$: 374.0544; found: 374.0541.

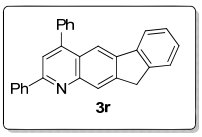
5.17 8-Methoxy-6-methyl-2,4-diphenylquinoline (3q; Scheme 3)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 47 mg, 72%; R_f = 0.30 (05:95 = EtOAc/n-Hexane); Light yellow Solid; **mp** 150-152 °C; **FT-IR (neat):** 3402, 2927, 2776, 2087, 1636, 1563, 1549, 1519, 1487, 1421, 1406, 1264, 1199, 1159, 1129, 1108, 902, 842, 764 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 8.03 (d, *J* = 8.0, 2H), 7.79 (s, 1H), 7.54 – 7.46 (m, 7H), 7.41 (s, 1H), 7.21(s, 1H), 6.91(s,1H), 4.10 (s, 3H), 2.44 (s, 3H) ; **^{13}C NMR (100 MHz, CDCl$_3$):** δ, 155.4, 154.8, 148.4, 139.8, 139.3, 138.9, 136.4, 129.5, 129.0, 128.7, 128.5, 128.2, 127.6, 126.8, 119.9, 116.4, 110.2, 56.2, 22.5; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{23}H_{20}NO$: 326.1545; found: 326.1549.

5.18 2,4-Diphenyl-10H-indeno[1,2-g]quinoline (3r; Scheme 3)

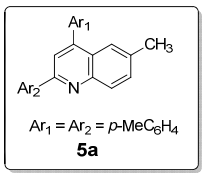


The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 51.6 mg, 70%; R_f = 0.34 (05:95 = EtOAc/n-Hexane); Light yellow Solid; **mp** 200-202 °C; **FT-IR (neat):** 3422, 3058, 2925, 2363, 2329, 1700, 1603, 1494, 1455, 1368, 1265, 1030, 766, 727 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 8.34 (s, 1H), 8.21 (d, *J* = 8.0 Hz, 3H), 7.81 (s, 1H), 7.78 (m, 1H), 7.58 (m, 8H), 7.45 (m, 1H), 7.34 (2H), 4.16 (s, 2H) ; **^{13}C NMR (100**

MHz, $CDCl_3$): δ, 156.0, 149.1, 148.7, 145.2, 143.9, 141.0, 140.7, 139.8, 138.9, 129.7, 129.2, 128.8, 128.7, 128.4, 127.9, 127.5, 127.0, 125.7, 125.3, 125.3, 120.8, 119.0, 115.2, 36.6 ; **GC-MS (EI, *m/z*):** $[M]^+$calculated for $C_{28}H_{19}N$: 369.1517; found: 369.1518.

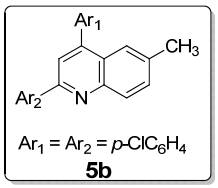
5.19 6-Methyl-2,4-di-p-tolylquinoline (5a; Scheme 4)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 52 mg, 80%; R_f = 0.28 (05:95 = EtOAc/n-Hexane); Brown liquid; **FT-IR (neat):** 3449, 3024, 2920, 2092, 1637, 1353, 1114, 882, 823, 748 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.10 (d, *J* = 8.0 Hz, 1H), 8.06 (d, *J* = 8.0 Hz, 2H), 7.73 (s, 1H), 7.65 (s, 1H), 7.53 (dd, *J* = 12.0, 4 Hz, 1H), 7.44 (d, *J* = 8.0 Hz, 2H), 7.35 (d, *J* = 8.0 Hz, 2H), 7.31 (d, *J* = 8.0 Hz, 2H), 2.48 (s, 3H), 2.46 (s, 3H), 2.42 (s, 3H) ; **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 156.0, 148.4, 147.4, 139.1, 138.1, 137.0, 135.9, 135.8, 131.6, 129.7, 129.5, 129.5, 129.3, 127.3, 125.7, 124.4, 119.2, 21.8, 21.3, 21.3; **LR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{24}H_{22}N$: 324.2; found: 324.2.

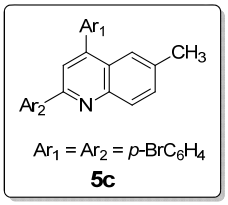
5.20 2,4-Bis(4-chlorophenyl)-6-methylquinoline (5b; Scheme 4)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 55.4 mg, 76%; R_f = 0.40 (20:80 = EtOAc/n-Hexane); White solid; **mp** 182-185 °C; **FT-IR (neat):** 3436, 2923, 2092, 1646, 1484, 1353, 1088, 1009, 823, 746 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.12 – 8.09 (3H), 7.68 (s, 1H), 7.58 – 7.52 (4H), 7.48 – 7.46 (4H), 2.47 (s, 3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 154.6, 147.4, 147.3, 137.9, 136.8, 136.8, 135.5, 134.6, 132.1, 130.8, 129.9, 129.0, 128.9, 128.7, 125.5, 124.1, 118.8, 21.8; **GC-MS (EI, *m/z*):** $[M]^+$ calculated for $C_{22}H_{15}Cl_2N$: 363.0582; found: 363.0590.

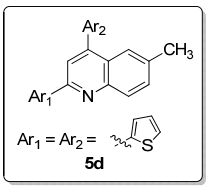
5.21 2,4-Bis(4-bromophenyl)-6-methylquinoline (5c; Scheme 4)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 69.7 mg, 77%; R_f = 0.35 (20:80 = EtOAc/n-Hexane); White solid; **mp** 188-190 °C; **FT-IR (neat):** 3385, 3059, 2930, 2092, 1627, 1530, 1486, 1399, 1263, 1138, 1071, 1024, 1009, 976, 929, 816 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.10 (d, *J* = 8.0 Hz, 1H), 8.05 (d, *J* = 12.0 Hz, 2H), 7.69 – 7.67 (m, 3H), 7.63 (d, *J* = 8.0 Hz, 2H), 7.58 – 7.56 (2H), 7.41 (d, *J* = 12.0 Hz, 2H), 2.47 (s, 3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 154.7, 147.4, 147.3, 138.4, 137.3, 136.8, 132.1, 131.9, 131.8, 131.1, 129.9, 128.9, 125.5, 124.1, 123.8, 122.8, 118.7, 21.8; **HR-MS (APCI, *m/z*):** $[M+H]^+$ calculated for $C_{22}H_{16}Br_2N$: 451.9649; found: 451.9645.

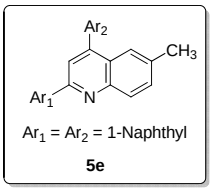
5.22 6-Methyl-2,4-di(thiophen-2-yl)quinoline (5d; Scheme 4)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 48 mg, 78%; R_f = 0.36 (05:95 = EtOAc/n-Hexane); Yellow solid; **mp** 145-148 °C; **FT-IR (neat):** 3438, 3050, 2925, 2853, 2363, 1597, 1469, 1264, 1059, 779, 739 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.03 (d, *J* = 8.0 Hz, 1H), 7.94 (s, 1H), 7.79 (s, 1H), 7.72 (dd, *J* = 8.0, 4.0 Hz 1H), 7.55 – 7.52 (2H), 7.44 (d, *J* = 8.0 Hz, 1H), 7.39 (d, *J* = 4.0 Hz, 1H), 7.24 (t, *J* = 4 Hz, 1H), 7.14 (dd, *J* = 8.0, 4.0 Hz 1H), 2.49 (s, 3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 151.0, 147.4, 145.2, 140.7, 139.1, 136.5, 132.1, 129.5, 128.4, 128.3, 128.1, 127.8, 127.0, 125.6, 125.5, 124.3, 118.5, 21.8; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{18}H_{14}NS_2$: 308.0568; found: 308.0562.

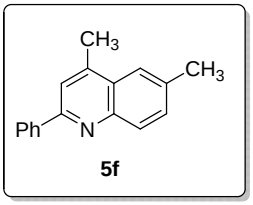
5.23 6-Methyl-2,4-di(naphthalen-1-yl)quinoline (5e; Scheme 4)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 64.2 mg, 81%; R_f = 0.30 (10:90 = EtOAc/Hexane); White solid; **mp** 65-70 °C; **IR (neat):** 3355, 3419, 3110, 3053, 2769, 1927, 1623, 1589, 1562, 1508, 1477, 1349, 1292, 1143, 1112, 1087, 1017, 938, 906, 851, 827, 817, 775, 756, 699 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$)**: δ, 8.36 (m, 1H), 8.25 (d, *J* = 8.0 Hz, 1H), 8.01 – 7.91 (4H), 7.81 (d, *J* = 8.0 Hz, 1H), 7.73 (s, 1H), 7.62 (d, *J* = 8.0 Hz, 2H), 7.56 (m, 3H), 7.51 (m, 3H), 7.39 (t, *J* = 8.0 Hz, 1H), 7.31 (s, 1H), 2.37 (s, 3H) ; **^{13}C NMR (100 MHz, $CDCl_3$)**: δ, 158.0, 147.1, 146.8, 138.7, 136.7, 135.9, 134.1, 133.6, 132.1, 132.1, 131.4, 129.8, 129.1, 128.7, 128.4, 128.4, 127.9, 127.5, 126.8, 126.6, 126.5, 126.2, 126.1, 125.9, 125.8, 125.4, 125.3, 124.9, 124.7, 21.7; **GC-MS (EI, *m/z*)**: $[M]^+$ calculated for $C_{30}H_{21}N$: 395.1674; found; 395.1656.

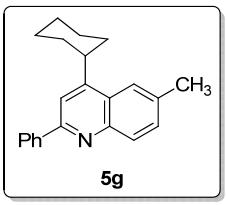
5.24 4,6-Dimethyl-2-phenylquinoline (5f; Scheme 4):[8]



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 34 mg, 73%; R_f = 0.33 (05:95 = EtOAc/Hexane); Brown solid; **mp**. 145-147 ^{o}C; **IR (neat):** 3332, 3102, 3025, 1623, 1503, 1449, 1281, 972 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$)**: δ, 8.18 – 8.11 (2H), 8.11 – 8.01 (m, 1H), 7.72 (s, 1H), 7.62 (s, 1H), 7.56 – 7.52 (2H), 7.51 – 7.45 (m, 1H), 7.44 – 7.42 (1H), 2.53 (s, 3H), 2.34 (s, 3H) ; **^{13}C NMR (100 MHz, $CDCl_3$)**: δ, 156.0, 148.1, 139.9, 139.7, 138.8, 136.3, 129.5, 128.7, 128.2, 127.4, 124.7, 124.2, 118.6, 20.29, 20.26 ; **LR-MS (ESI, *m/z*)**: $[M+H]^+$ calculated for $C_{17}H_{16}N$: 234.1; found: 234.2.

5.25 4-Cyclohexyl-6-methyl-2-phenylquinoline (5g; Scheme 4)

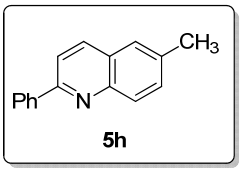


5g

The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 42.4 mg, 71%; R_f = 0.33 (05:95 = EtOAc/n-Hexane); Light yellow solid; **mp**. 130-132 ^oC; **FT-IR (neat):** 3433, 2924, 2503, 2086, 1637, 1450, 1127, 1034, 901, 824, 769, 744 cm^{-1}; **^{1}H NMR (400 MHz CDCl$_3$):** δ, 8.11 (d, *J* = 8.0 Hz, 2H), 8.07 (d, *J* = 8.0 Hz, 1H), 7.81 (s, 1H), 7.70 (s, 1H), 7.53 – 7.48 (3H), 7.43 (m, 1H), 3.34 (m, 1H), 2.57 (s, 3H), 2.07 – 2.04 (2H), 1.96 – 1.94 (2H), 1.66 – 1.57 (6H); **^{13}C NMR (100 MHz, CDCl$_3$):** δ, 156.5, 153.2, 147.1, 140.4, 135.6, 131.2, 130.4, 128.9, 128.7, 127.5, 125.8, 121.7, 115.5, 38.9, 33.7, 29.7, 26.9, 26.7, 26.3, 22.1; **GC-MS (EI, *m/z*):** $[M]^+$ calculated for $C_{22}H_{23}N$: 301.1830; found: 301.1817.

5.26 6-Methyl-2-phenylquinoline (5h; Scheme 4)

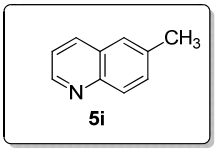


5h

The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 30.7 mg, 70%; R_f = 0.36 (05:95 = EtOAc/n-Hexane); Yellow solid; **mp** 65-70 °C; **FT-IR (neat):** 3430, 2905, 2421, 2105, 1638, 1598, 1557, 1493, 1375, 1322, 1020, 934, 831, 781, 767 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 8.15 – 8.11 (3H), 8.05 (d, *J* = 8.0 Hz, 1H), 7.83 (d, *J* = 12.0 Hz, 1H), 7.58 (s, 1H), 7.56 – 7.53 (1H), 7.51– 7.49 (2H), 7.45 – 7.42 (m,1H), 2.54 (s, 3H) ; **^{13}C NMR (100 MHz, CDCl$_3$):** δ, 156.5, 146.9, 139.8, 136.1, 136.1, 131.9, 129.4, 129.1, 128.8, 127.5, 127.2, 126.3, 119.0, 21.6; **HR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{16}H_{14}N$: 220.1126; found: 220.1146.

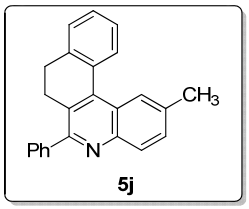
5.27 6-Methylquinoline (5i; Scheme 4)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 17.5 mg, 61%; R_f = 0.24 (05:95 = EtOAc/n-Hexane); Light yellow liquid; **FT-IR (neat):** 3435, 2923, 2092, 1646, 1484, 1493, 1254, 1013, 812, 750, 706 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.69 (s, 1H), 7.89 – 7.81 (2H), 7.34 (m, 2H), 7.12 (s, 1H), 2.32 (s, 3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 149.4, 146.8, 136.1, 135.2, 131.6, 129.0, 128.2, 126.5, 120.9, 21.41; **LR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{10}H_{10}N$: 144.1; found: 144.2.

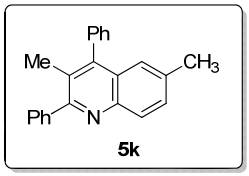
5.28 2-methyl-6-phenyl-7,8-dihydrobenzo[k]phenanthridine (5j; Scheme 4)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 42 mg, 65%; R_f = 0.38 (05:90 = EtOAc/n-Hexane); Light yellow solid; **mp** 138-140 °C **FT-IR (neat):** 3437, 2918, 2601, 2087, 1647, 1493, 1254, 1013, 812, 750 cm^{-1}; **^{1}H NMR (400 MHz, $CDCl_3$):** δ, 8.58 (d, *J* = 8.0 Hz, 1H), 8.06 (d, *J* = 8.0 Hz, 1H), 7.56 – 7.49 (3H), 7.46 (dd, *J* = 8.0, 4.0 Hz, 1H), 7.42 (t, *J* = 8.0 Hz, 1H), 7.34 (1H), 7.30 (m, 2H), 7.22 (d, *J* = 8.0 Hz, 1H), 7.14 (s, 1H), 2.86 – 2.84 (m, 2H), 2.82 – 2.79 (m, 2H), 2.39 (s, 3H); **^{13}C NMR (100 MHz, $CDCl_3$):** δ, 152.3, 145.8, 144.7, 139.2, 137.2, 135.8, 135.2, 130.7, 129.5, 129.4, 129.4, 128.5, 128.1, 127.8, 127.6, 127.2, 127.2, 126.2, 124.8, 28.3, 26.5, 21.8; **GC-MS (EI, *m/z*):** $[M]^+$ calculated for $C_{24}H_{19}N$: 321.1517; found: 321.1506.

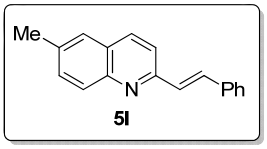
5.29 3,6-Dimethyl-2,4-diphenylquinoline (5k; Scheme 4)



The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 45.8 mg, 74%; R_f = 0.43 (05:95 = EtOAc/n-Hexane); Dark brown liquid; **FT-IR (neat):** 3338, 2925, 2855, 2364, 2334, 1717, 1496, 1458, 1303, 1077, 911, 700 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 8.18 – 8.16 (m, 2H), 8.01 (m, 1H), 7.72 – 7.62 (1H), 7.55 (s, 1H), 7.53 – 7.49 (5H), 7.45 – 7.44 (2H), 7.43 (m, 1H), 2.44 (s, 3H), 2.33 (s, 3H); **^{13}C NMR (100 MHz, CDCl$_3$):** δ, 156.0, 148.0, 139.7, 138.8, 136.3, 129.5, 129.4, 129.1, 128.6, 128.5, 128.8, 128.5, 128.3, 127.5, 124.7, 124.2, 118.7, 20.3, 20.2 ; **LR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{23}H_{20}N$: 310.1; found: 310.2.

5.30 (E)-6-Methyl-2-styrylquinoline (5l; Scheme 4)[11]

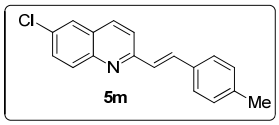


5l

The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 36.8 mg, 75%; R_f = 0.26 (10:90 = EtOAc/n-Hexane); white solid; **mp** 130-132 °C; **FT-IR (neat):** 3365, 2930, 2105, 1637, 1493, 1441, 1121, 961, 926, 828, 746 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 7.97 (d, *J* = 8.0 Hz, 2H), 7.65 – 7.57 (4H), 7.51 (d, *J* = 8.0 Hz, 2H), 7.38 (3H), 7.30 (t, *J* = 8.0, 4.0 Hz, 1H), 2.50 (s, 3H) ; **^{13}C NMR (100 MHz, CDCl$_3$):** δ, 155.1, 146.8, 136.6, 136.1, 135.6, 133.8, 132.0, 129.2, 128.9, 128.8, 128.5, 127.4, 127.2, 126.5, 119.2, 21.6; **LR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{18}H_{16}N$: 246.1; found: 246.2.

5.31 (E)-6-Chloro-2-(4-methylstyryl)quinoline (5m; Scheme 4)[11]



5m

The title compound was prepared using the general procedure for the K^{t}OBu catalyzed oxidative cycloisomerization.

Yield: 40.4 mg, 72%; R_f = 0.31 (05:95 = EtOAc/n-Hexane); white solid; **mp** 140-145 °C ; **FT-IR (neat):** 3365, 2925, 2098, 1631, 1485, 1436, 1101, 957, 916, 813, 741 cm^{-1}; **^{1}H NMR (400 MHz, CDCl$_3$):** δ, 8.10 (d, *J* = 8.4 Hz, 1H), 8.01 (d, *J* = 8.6 Hz, 1H), 7.71 (d, *J* = 8.1 Hz, 1H), 7.64 (d, *J* = 16.3 Hz, 1H), 7.57 (d, *J* = 8.6 Hz, 1H), 7.52 (d, *J* = 8.0 Hz, 2H), 7.44 (t, *J* = 7.8 Hz, 1H), 7.36 (d, *J* = 16.3 Hz, 1H), 7.18 (d, *J* = 7.9 Hz, 2H), 2.35 (s, 1H); **^{13}C NMR (100**

MHz, $CDCl_3$): δ, 156.21, 148.31, 138.73, 136.26, 134.45, 133.80, 129.71, 129.58, 129.19, 128.08, 127.55, 127.31, 127.27, 126.06, 119.23, 21.42; **LR-MS (ESI, *m/z*):** $[M+H]^+$ calculated for $C_{18}H_{15}ClN$: 280.1; found: 280.1.

6. References:

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