Supporting Information

For

A Versatile Synthesis of Bis[2-(2´-hydroxylphenyl)benzoxazole] Derivatives as Zinc sensors

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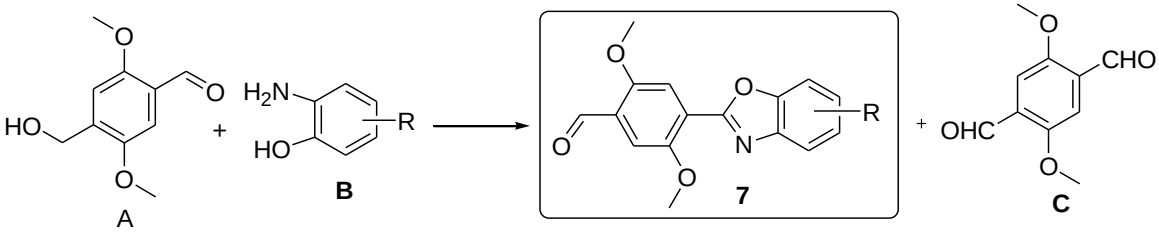
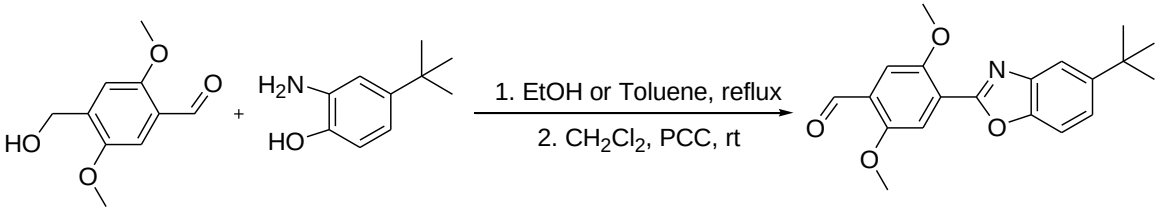
General procedure A



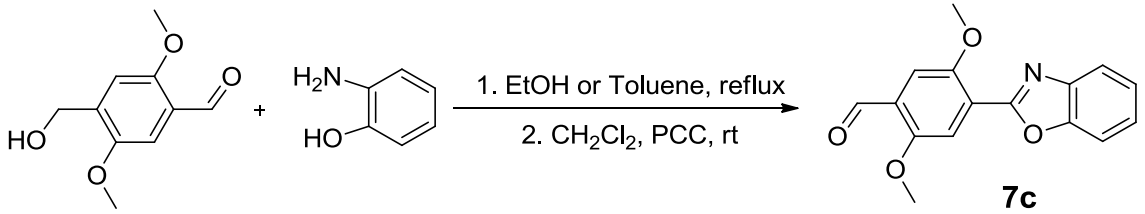
Intermediates **A** (600 mg, 3.06 mmol) and **B** (3.2 mmol) were dissolved in EtOH (50 mL), and the mixture was refluxed overnight. The crude product mixture was concentrated under vacuum and dried in a vacuum oven overnight. The resulting mixture was then re-dissolved in 80 mL anhydrous DCM (Solution I). PCC (1.5 g) and silica gel (4.5 g) were mixed in 80 mL DCM and stirred at room temperature for one hour (Solution II). The PCC solution II was added to the solution I and the mixture was stirred overnight and then filtered through a short pad of silica and washed by EtOAc. The organic phase was collected, concentrated in vacuum, and purified on a silica gel column to give **7** in 50-65% yield as yellow solid.

Synthesis of 7b



Compound **7b** was made according to the general procedure **A**. ^{1}H NMR (300 MHz, $CDCl_3$): 10.50 (1H, s), 7.87 (1H, d, *J* = 1.2 Hz), 7.80 (1H, s), 7.53 (1H, d, *J* = 8.4 Hz), 7.52 (1H, s), 7.45 (1H, dd, *J* = 1.2 Hz, *J* = 8.4 Hz), 4.01 (6H, s), 1.39 (9H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 189.2, 160.8, 155.9, 152.7, 148.9, 148.5, 142.0, 126.9, 123.8, 122.8, 117.2, 114.7, 111.3, 110.1, 57.0, 56.6, 35.2, 31.9.

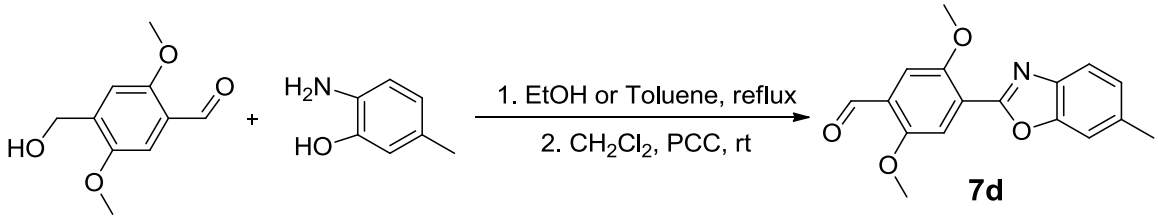
Synthesis of 7c



7c

Compound **7c** was made according to the general procedure **A**. ^{1}H NMR (300 MHz, $CDCl_3$): 10.52 (1H, s), 7.87-7.83 (1H, m), 7.83 (1H, s), 7.65-7.62 (1H, m), 7.54 (1H, s), 7.41-7.37 (2H, m), 4.03 (6H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 188.9, 160.5, 155.6, 152.5, 150.6, 141.8, 126.9, 125.7, 124.7, 122.3, 120.5, 114.6, 111.0, 110.7, 56.8, 56.3.

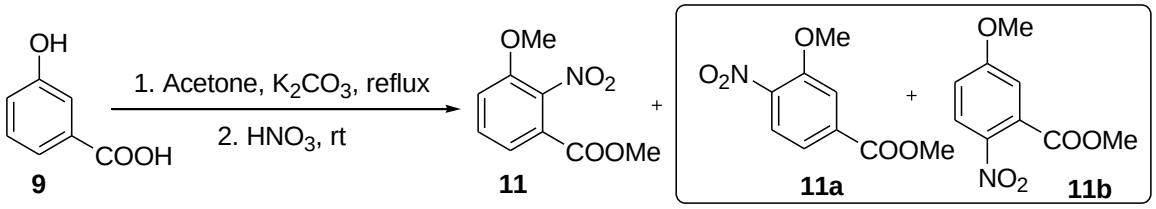
Synthesis of 7d



7d

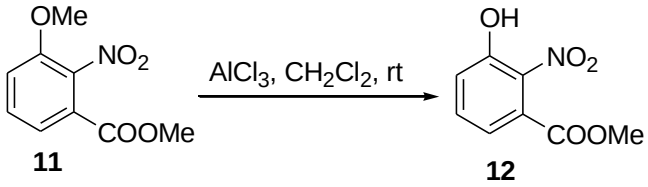
Compound **7d** was made according to the general procedure **A**. ^{1}H NMR (300 MHz, $CDCl_3$): 10.46 (1H, s), 7.74 (1H, s), 7.67 (1H, d, *J* = 8.4 Hz), 7.47 (1H, s), 7.38 (1H, s), 7.15 (1H, d, *J* = 8.4 Hz), 3.98 (6H, s), 2.48 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 189.0, 160.0, 155.7, 152.5, 151.0, 139.9, 136.4, 126.8, 126.2, 122.6, 119.9, 114.5, 111.1, 110.9, 56.9, 56.5, 22.0.

Synthesis of 11



3-Hydroxybenzoic acid (Acros) **9** (1.38 g) was dissolved in 40 mL acetone, then K_2CO_3 (3.0 g) and dimethyl sulfate (2.7g) were added in one portion. The mixture was heated to reflux for 1-2 hours until **9** was completely consumed (monitored by TLC). Then the reaction mixture was cooled down to room temperature. The reaction mixture was passing through a short pad of silica gel to remove K_2CO_3, and 200 mL acetone was used subsequently to wash the residue. The clear filtration was condensed under vacuum to give a syrup-like residue, which was dissolved in 15 mL HNO_3 (68-70% in aqueous as received) at room temperature. The solution was well stirred overnight until the starting material was consumed (monitored by TLC). Compound **11** was precipitated out from the solution (Nitrates **11a** and **11b** were still in the solution and were recovered by extraction with DCM). Simple filtration will afford **11**, which was recrystallized from MeOH or EtOAc/Hexane to give large colorless square crystals as pure product in about 50-60% yield. ^{1}H NMR (300 MHz, $CDCl_3$): 7.58 (1H, dd, J = 1.2 Hz, J = 7.2 Hz), 7.47 (1H, t, J = 8.1 Hz), 7.24 (1H, dd, J = 1.2 Hz, J = 8.1 Hz), 3.90 (3H, s), 3.87 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 163.4, 150.9, 130.8, 123.6, 122.1, 117.1, 56.8, 52.9.

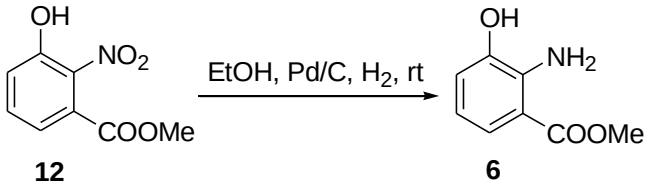
Synthesis of 12



Compound **11** (2.11 g) was dissolved in 35 mL dichloromethane, then $AlCl_3$ (1.9g) was added in one portion. The solution was stirred at room temperature overnight. After the completion of the reaction, water was added to stop the reaction and the product was extracted by DCM. The organic layer was passing through a short pad of silica and washed with EtOAc to afford **12** in 98% yield as light yellow solid. ^{1}H NMR (300 MHz, $CDCl_3$): 10.13 (1H, s), 7.57 (1H, tri, J = 7.5 Hz), 7.24 (1H, dd, J = 1.5 Hz, J = 7.5 Hz),

7.07 (1H, dd, *J* = 1.5 Hz, *J* = 7.5 Hz), 3.93 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 166.8, 154.7, 136.2, 131.2, 122.1, 120.9, 53.6.

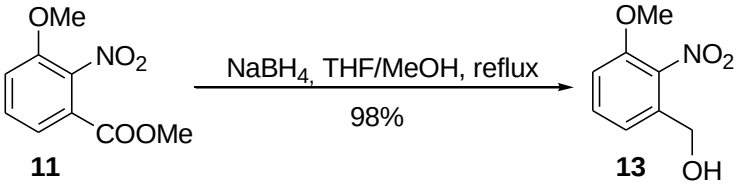
Synthesis of 6



12 **6**

To a solution of **12** (600 mg) in EtOH (25 mL) was added Pd/C (40 mg). The reaction mixture in the flask was stirred under H_2 at room temperature overnight. The resulting product mixture was filtered to afford **6** in quantitative yield as white solid. ^{1}H NMR (300 MHz, $CDCl_3$): 7.46 (1H, d, *J* = 8.1 Hz), 6.82 (1H, d, *J* = 7.8 Hz), 6.50 (1H, tri, *J* = 7.8 Hz), 6.05 (4H, br), 3.87 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 169.3, 143.8, 140.5, 123.2, 118.4, 115.8, 111.8, 51.9.

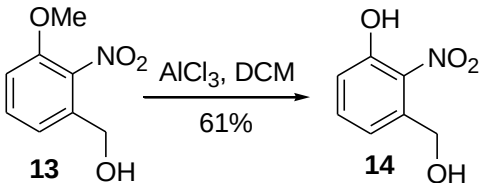
Synthesis of 13



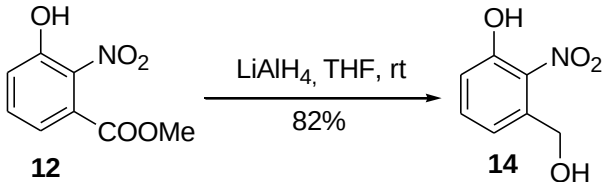
11 **13**

To a solution of **11** (300 mg) in dry THF (25 mL) was added $NaBH_4$ (250 mg), the reaction mixture was heated to reflux for 4 hours. Then a small amount of methanol was added in portions and the reaction was monitored by TLC carefully until **11** disappeared completely. Then the reaction was cooled down by icy water bath and quenched by addition of water. The solvent was removed under vacuum. The residue was dissolved by adding water and DCM. The water was washed by DCM three times. The organic phase was purified by silica gel chromatography to give **13** in 98% yields as white solid. ^{1}H NMR (300 MHz, $CDCl_3$): 7.74 (1H, t, *J* = 8.1 Hz), 7.07 (1H, d, *J* = 7.5 Hz), 6.97 (1H, d, *J* = 8.4 Hz), 4.58 (2H, s), 3.86 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 151.2, 134.4, 131.8, 120.5, 112.3, 60.9, 56.6.

Synthesis of 14

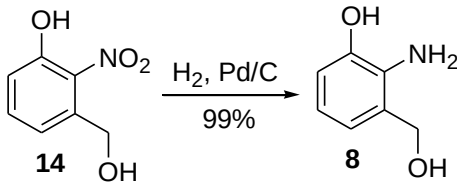


Method-I: Compound **14** was synthesized from **13,** using the method for the preparation of **12**.



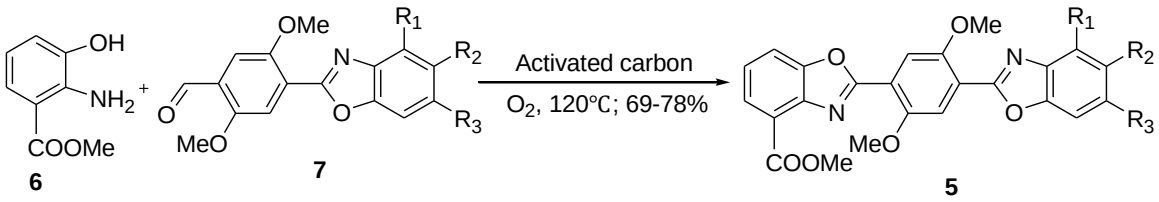
Method-II: To a solution of **12** (300 mg) in dry THF (25 mL) was added $LiAlH_4$ (250 mg), the reaction mixture was stirred at room temperature for 2 hours. Upon completion of the reaction, the reaction was quenched by addition of Na_2SO_4 solution. The resulting mixture was filtered and then crude product was concentrated and purified on a silica gel column to give **12** in 82-90% yields. ^{1}H NMR (300 MHz, $CDCl_3$): 10.58 (1H, s), 7.54 (1H, t, *J* = 8.1 Hz), 7.25 (1H, d, *J* = 6.3 Hz), 7.12 (1H, d, *J* = 8.4 Hz), 4.97 (2H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 155.9, 139.5, 136.3, 120.8, 119.4, 63.4.

Synthesis of 8



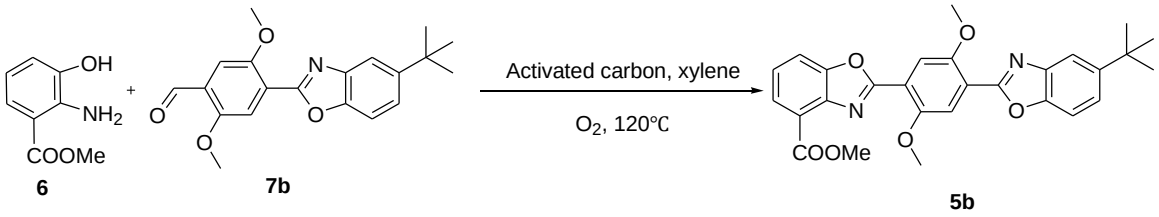
To a solution of **14** (500 mg) in EtOH (35 mL) was added Pd/C (35 mg). The reaction mixture in the flask was stirred under H_2 at room temperature overnight. The resulting product mixture was filtered to afford **8** in quantitative yield as white solid. ^{1}H NMR (300 MHz, $CDCl_3$): 6.58 (1H, d, *J* = 7.8 Hz), 6.53 (1H, d, *J* = 7.2 Hz), 6.46 (1H, t, *J* = 7.5 Hz), 4.48 (2H, s), 3.94 (2H, br). ^{13}C NMR (75 MHz, $CDCl_3$): 144.9, 133.7, 126.6, 120.4, 118.4, 114.4, 62.9.

General procedure B



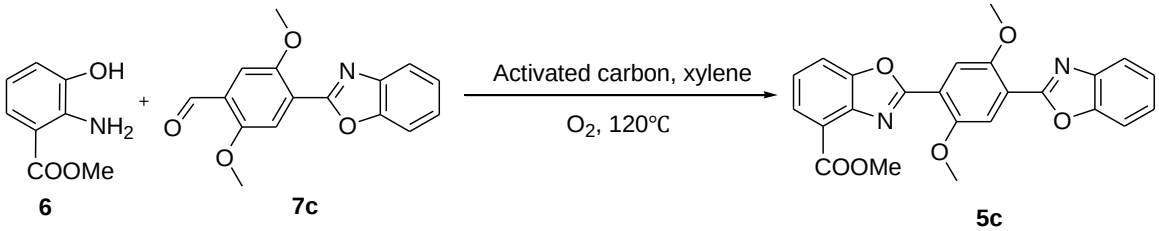
Intermediate compounds **6** (0.167 g, 1.0 mmol) and **7** (2-3 mmol) were dispersed in xylenes (15 mL), and activated carbon (100-200 mg) was added to the reaction mixture. The resulting mixture was well stirred at 110 ℃ while the oxygen gas was bubbled into the reaction mixture. Upon completion of the reaction, the mixture was filtered and washed by EtOH. The resulting crude product was concentrated and purified on a silica gel column to give **5** in 69-78% yields.

Synthesis of 5b



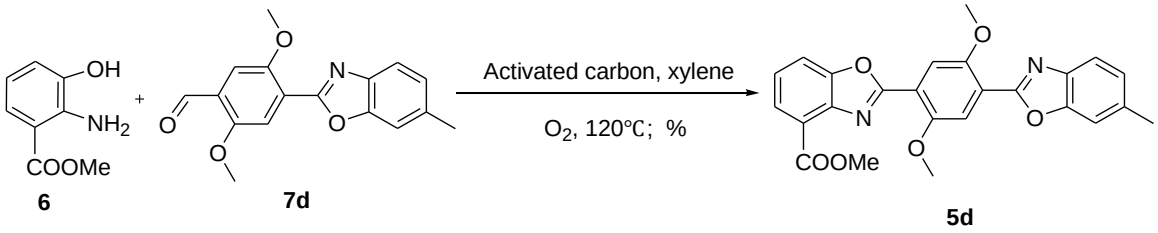
Compound **5b** was made according to the general procedure **B**. ^{1}H NMR (300 MHz, $CDCl_3$): 8.04 (1H, d, *J* = 7.8 Hz), 7.97 (1H, s), 7.87 (2H, s), 7.81 (1H, d, *J* = 8.4 Hz), 7.53 (1H, d, *J* = 8.7 Hz), 7.43 (1H, d, *J* = 7.8 Hz), 7.40 (1H, d, *J* = 8.1 Hz), 4.11 (3H, s), 4.10 (3H, s), 4.06 (3H, s), 1.39 (9H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 165.9, 126.9, 160.8, 152.8, 152.4, 151.5, 148.7, 148.4, 142.0, 141.4, 127.3, 124.9, 12.35, 122.4, 120.4, 118.8, 117.1, 115.6, 115.2, 114.9, 109.9, 57.3, 57.1, 52.6, 35.1, 31.9.

Synthesis of 5c



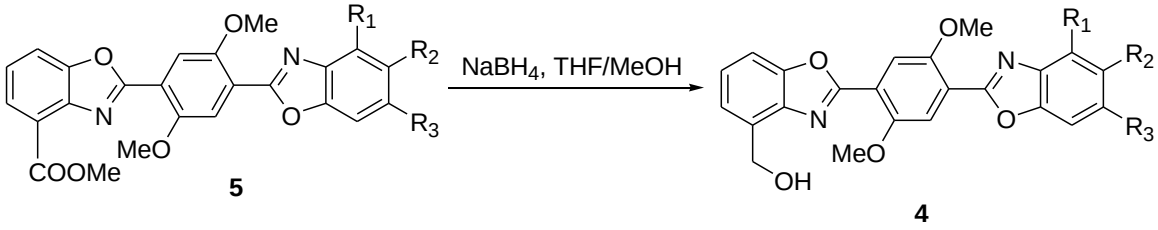
Compound **5c** was made according to the general procedure **B**. ^{1}H NMR (300 MHz, $CDCl_3$): 8.04 (1H, d, *J* = 7.8 Hz), 7.98 (1H, s), 7.88 (1H, s), 7.86-7.83 (1H, m), 7.62 (1H, m), 7.45 (1H, d, *J* = 8.1 Hz), 7.40-7.35 (2H, m), 4.11 (3H, s), 4.10 (3H, s), 4.06 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 165.7, 162.7, 160.5, 152.7, 152.3, 153.3, 151.3, 150.5, 141.9, 141.2, 127.2, 125.5, 124.7, 124.6, 122.2, 120.4, 119.9, 118.8, 115.4, 115.0, 114.8, 110.7, 57.1, 56.9, 52.5.

Synthesis of 5d



Compound **5d** was made according to the general procedure **B**. ^{1}H NMR (300 MHz, $CDCl_3$): 8.07 (1H, d, *J* = 7.8 Hz), 7.99 (1H, s), 7.89 (1H, s), 7.84 (1H, d, *J* = 8.1 Hz), 7.72 (1H, d, *J* = 8.4 Hz), 7.48-7.43 (2H, m), 7.20 (1H, d, *J* = 8.1 Hz), 4.13 (3H, s), 4.12 (3H, s), 4.08 (3H, s), 2.53 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 166.2, 163.2, 160.5, 153.1, 152.6, 151.8, 151.3, 141.7, 140.3, 136.6, 127.6, 126.4, 125.2, 122.6, 120.6, 120.2, 118.9, 115.9, 115.5, 115.2, 111.3, 57.5, 57.4, 52.9, 22.3.

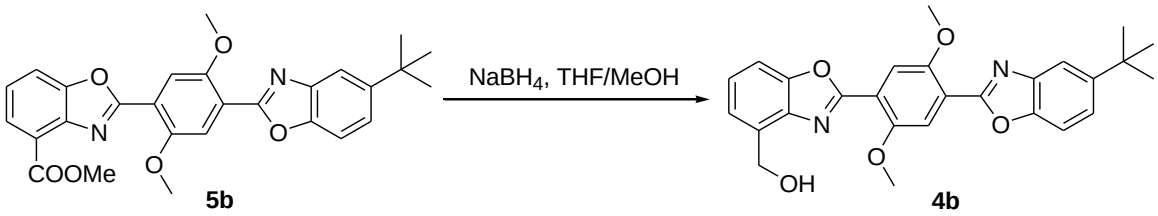
General procedure C



To a solution of **5** (300 mg) in dry THF (25 mL) was added $NaBH_4$ (400 mg), the reaction mixture was heated to reflux for 3 hours. Then small amount of methanol was added quickly and the reaction was monitored by TLC carefully until **5** disappeared completely. The reaction was cooled down by icy water bath and quenched by addition of water. The solvent was removed under vacuum. The residue was dissolved by adding water and DCM. The aqueous layer was washed by DCM three times. The organic phase

was purified by silica gel chromatography to give **4** in 82-88% yields as light yellow solid.

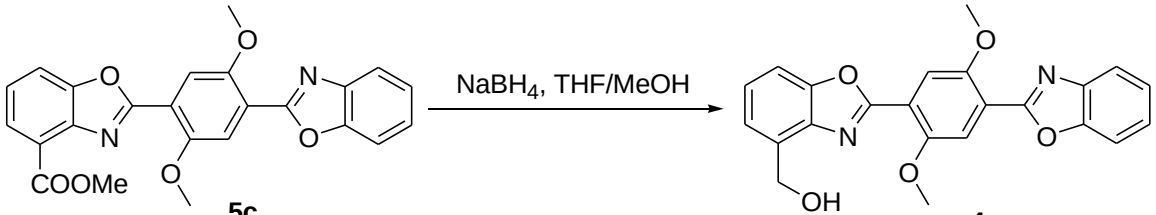
Synthesis of 4b



5b **4b**

Compound **4b** was made according to the general procedure **C**. ^{1}H NMR (300 MHz, $CDCl_3$): 7.87 (1H, s), 7.82 (2H, s), 7.54-7.50 (2H, m), 7.43 (1H, dd, *J* = 1.5 Hz, *J* = 8.7 Hz), 7.34-7.30 (2H, m), 5.16 (2H, d, *J* = 6.6 Hz), 5.13 (2H, d, *J* = 6.0 Hz), 4.08 (3H, s), 4.06 (3H, s), 3.67 (1H, br), 1.39 (9H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 160.7, 160.5, 152.2, 150.5, 148.5, 148.2, 141.8, 139.8, 133.1, 125.3, 123.3, 122.7, 119.6, 118.9, 116.9, 114.9, 114.8, 109.7, 109.7, 61.9, 56.9, 56.9, 34.9, 31.8.

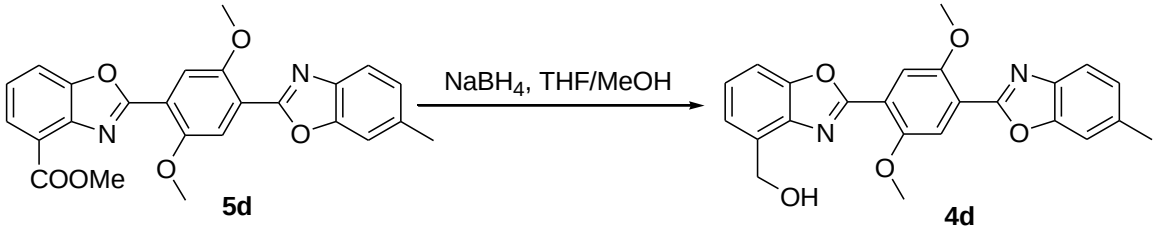
Synthesis of 4c



5c **4c**

Compound **4c** was made according to the general procedure **C**. ^{1}H NMR (300 MHz, DMSO-d_6): 7.88-7.81 (4H, m), 7.68 (1H, d, *J* = 7.5 Hz), 7.50-7.42 (4H, m), 5.34 (1H, tri, *J* = 5.7 Hz), 4.95 (2H, d, *J* = 5.7 Hz), 4.01 (3H, s), 4.00 (3H, s). ^{13}C NMR (75 MHz, DMSO-d_6): 161.3, 159.9, 151.7, 151.6, 150.2, 149.9, 141.1, 138.4, 134.6, 125.7, 125.5, 124.9, 122.4, 119.9, 119.1, 118.8, 115.1, 114.9, 110.9, 109.0, 58.4, 56.7, 56.7.

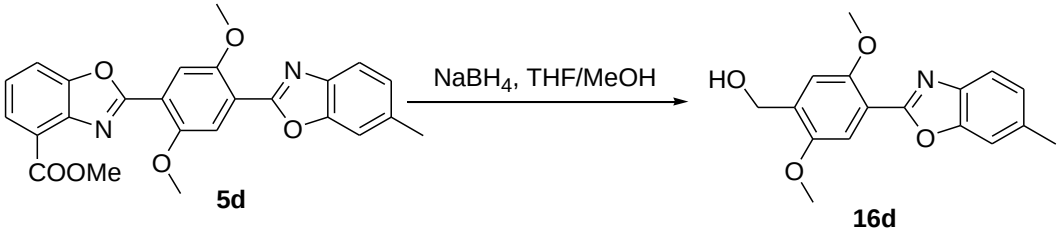
Synthesis of 4d



5d **4d**

Compound **4d** was made according to the general procedure **C**. ^{1}H NMR (300 MHz, $CDCl_3$): 7.88 (2H, s), 7.72 (1H, d, *J* = 8.1 Hz), 7.56 (1H, dd, *J* = 1.2 Hz, *J* = 7.8 Hz), 7.44 (1H, s), 7.39-7.31 (2H, m), 7.20 (1H, d, *J* = 7.8 Hz), 5.16 (2H, d, *J* = 6.6 Hz), 4.11 (3H, s), 4.09 (3H, s), 2.53 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 161.1, 152.8, 150.6, 139.7, 135.4, 134.3, 125.6, 119.3, 114.8, 112.7, 111.9, 110.6, 60.9, 56.7, 55.8, 21.8.

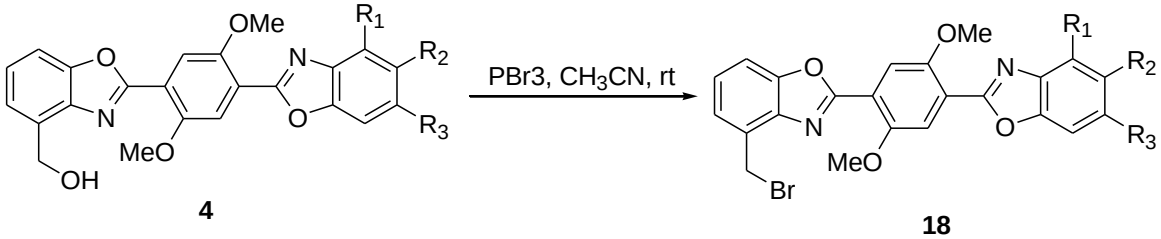
Byproduct 16d



5d **16d**

Compound **16d** was separated in the synthesis of **4d** when MeOH was used as the solvent. ^{1}H NMR (300 MHz, $CDCl_3$): 7.64 (1H, d, *J* = 8.1 Hz), 7.55 (1H, s), 7.37 (1H, s), 7.14 (1H, d, *J* = 8.1 Hz), 7.10 (1H, s), 4.73 (2H, s), 3.92 (3H, s), 3.87 (3H, s), 2.48 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 161.8, 153.4, 151.3, 140.4, 136.0, 134.9, 126.3, 119.9, 115.5, 113.3, 112.6, 111.3, 61.6, 57.4, 56.5, 22.4.

General procedure D

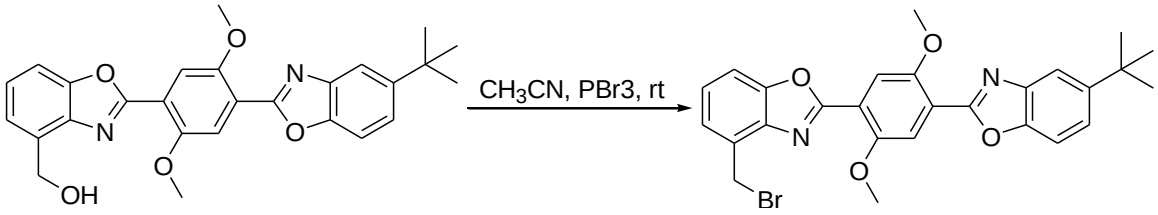


4 **18**

To a solution of **4** (1.0 mmol) in acetonitrile (15 mL) was added PBr_3 (2 mmol), the reaction mixture was stirred at room temperature overnight. The reaction was quenched

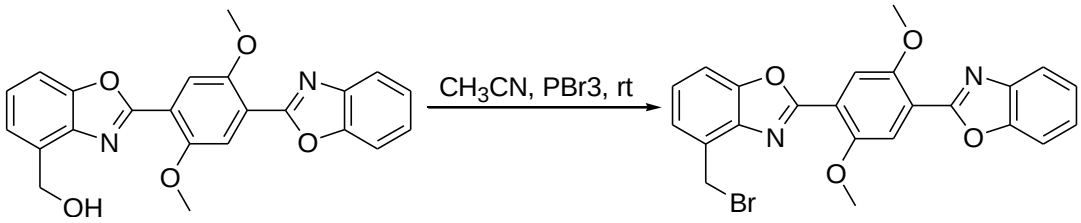
by addition of water and the resulting reaction mixture was concentrated. The residue was dissolved by adding water and DCM. The aqueous layer was washed by DCM three times. The organic phase was purified by silica gel chromatography to give **18** in up to 99% yield as light yellow solid.

Synthesis of 18b



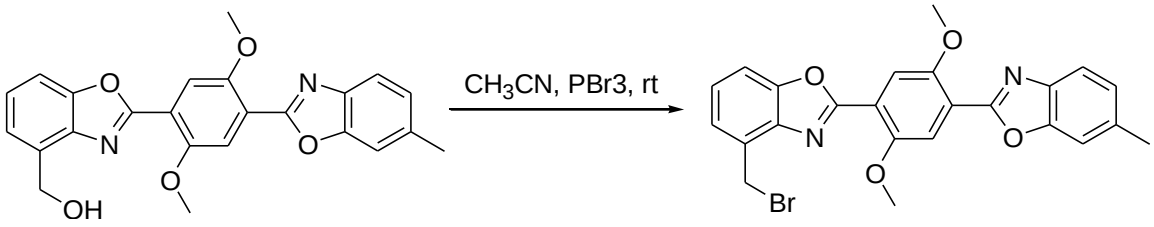
Compound **18b** was made according to the general procedure **D**. ^{1}H NMR (300 MHz, $CDCl_3$): 7.91 (1H, s), 7.89 (2H, s), 7.57 (1H, d, *J* = 8.4 Hz), 7.55 (1H, d, *J* = 8.7 Hz), 7.45 (2H, d, *J* = 8.7 Hz), 7.36 (1H, t, *J* = 7.8 Hz), 4.99 (2H, s), 4.13 (3H, s), 4.09 (3H, s), 1.41 (9H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 161.5, 160.9, 152.6, 152.6, 151.0, 148.8, 148.4, 142.1, 140.7, 130.1, 125.7, 125.6, 123.5, 120.0, 119.5, 117.1, 115.5, 115.2, 111.0, 109.9, 57.3, 57.3, 35.2, 32.0, 27.9.

Synthesis of 18c



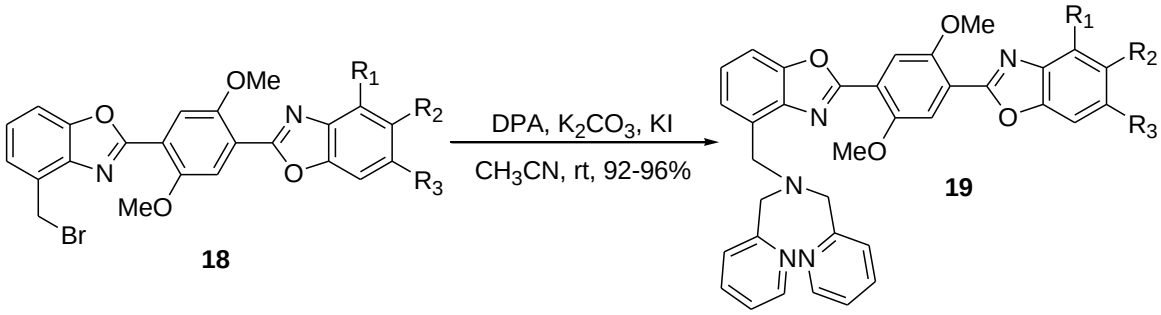
Compound **18c** was made according to the general procedure **D**. ^{1}H NMR (300 MHz, $CDCl_3$): 7.93 (1H, s), 7.91 (1H, s), 7.88-7.84 (1H, m), 7.66-7.63 (1H, m), 7.58 (1H, dd, *J* = 0.9 Hz, *J* = 8.1 Hz), 7.45 (1H, d, *J* = 6.9 Hz), 7.44-7.34 (3H, m), 4.99 (2H, s), 4.14 (3H, s), 4.10 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 161.2, 160.6, 152.4, 150.8, 150.5, 141.9, 140.4, 129.9, 125.5, 125.5, 125.4, 124.6, 120.4, 119.6, 119.5, 115.3, 115.1, 110.8, 110.7, 57.1, 57.1, 27.7.

Synthesis of 18d



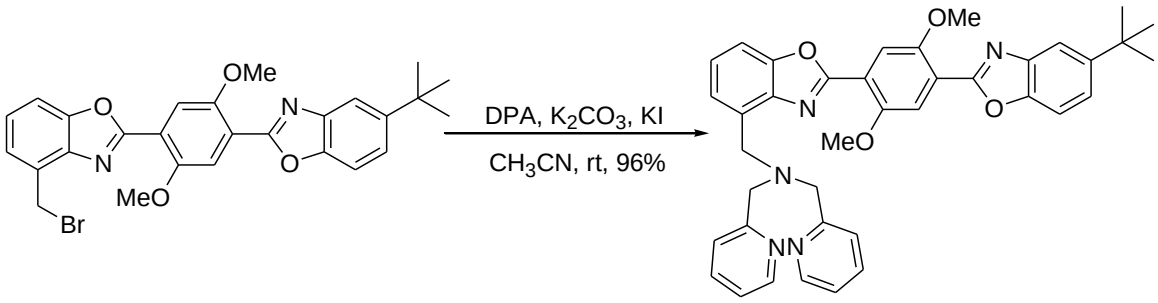
Compound **18d** was made according to the general procedure **D**. ^{1}H NMR (300 MHz, $CDCl_3$): 7.91 (1H, s), 7.88 (1H, s), 7.72 (1H, d, *J* = 8.1 Hz), 7.57 (1H, d, *J* = 7.8 Hz), 7.45 (1H, d, *J* = 6.6 Hz), 7.44 (1H, s), 7.36 (1H, t, *J* = 7.8 Hz), 7.19 (1H, d, *J* = 8.1 Hz), 4.99 (2H, s), 4.12 (3H, s), 4.09 (3H, s), 2.53 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 161.2, 160.1, 152.4, 152.3, 150.8, 150.7, 140.4, 139.8, 136.0, 129.8, 125.9, 125.5, 125.4, 119.8, 119.2, 115.2, 115.0, 110.8, 110.8, 57.1, 57.0, 27.7, 21.9.

General procedure E



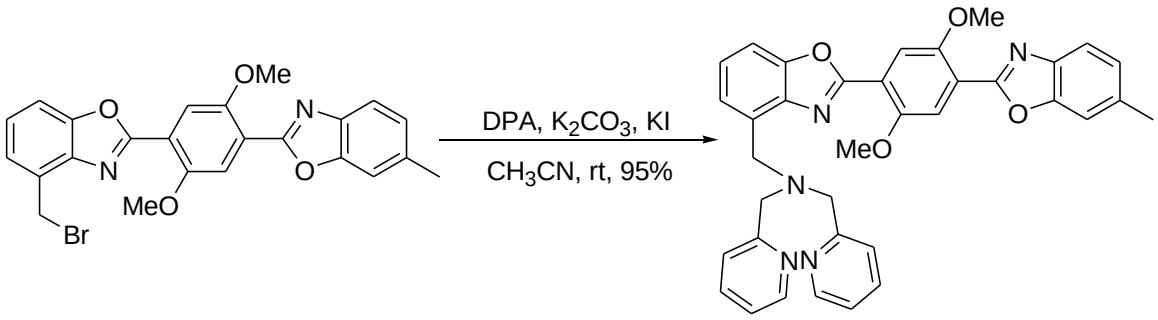
To a solution of **18** (1.0 mmol) in acetonitrile (15 mL) was added DPA (1.1 mmol), K_2CO_3 (2.0 mmol), and catalytic amount of KI. The reaction mixture was stirred at room temperature for 2 hours. The reaction mixture was concentrated and the residue was dissolved by adding water and DCM. The water was washed by DCM three times. The organic phase was purified by silica gel chromatography to give **19** in 92-96% yields as light yellow solid.

Synthesis of 19b



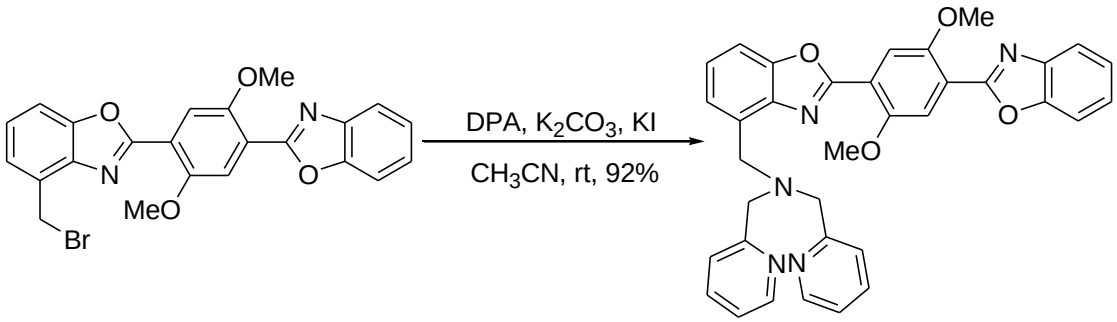
Compound **19b** was made according to the general procedure **E**. ^{1}H NMR (300 MHz, $CDCl_3$): 8.52 (2H, d, *J* = 6.4 Hz), 7.82 (3H, d, *J* = 6.6 Hz), 7.71 (1H, d, *J* = 8.1 Hz), 7.57 (2H, td, *J* = 1.5 Hz, *J* = 7.5 Hz), 7.51 (1H, d, *J* = 7.5 Hz), 7.45 (1H, d, *J* = 7.8 Hz), 7.38 (1H, dd, *J* = 1.8 Hz, *J* = 8.7 Hz), 7.30 (1H, t, *J* = 7.8 Hz), 7.07-7.02 (2H, m), 4.19 (2H, s), 4.04 (3H, s), 4.01 (3H, s), 3.89 (4H, s), 1.33 (9H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 160.7, 160.3, 152.6, 152.6, 150.9, 149.2, 148.8, 148.4, 142.1, 141.4, 136.6, 131.6, 125.4, 124.8, 123.5, 122.9, 122.1, 119.9, 119.8, 117.1, 115.5, 115.2, 109.9, 109.5, 60.6, 57.3, 57.3, 53.7, 35.2, 32.0, 29.9, 29.6.

Synthesis of 19c



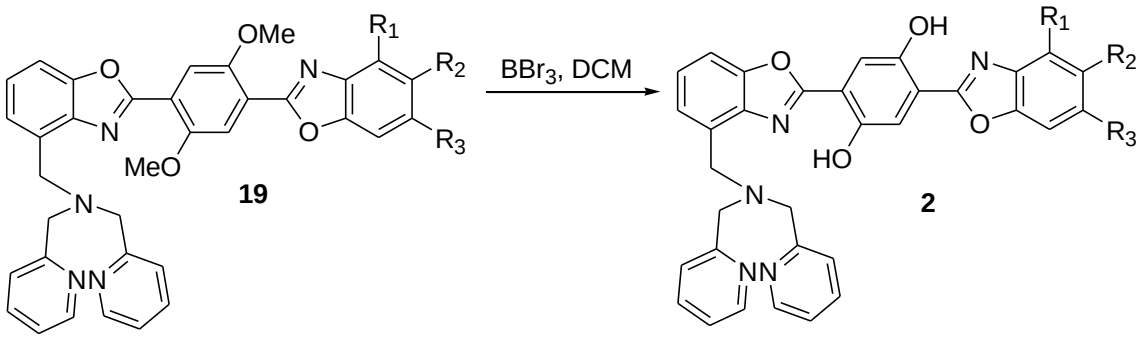
Compound **19c** was made according to the general procedure **E**. ^{1}H NMR (300 MHz, $CDCl_3$): 8.51 (2H, d, *J* = 4.2 Hz), 7.91 (1H, s), 7.87 (1H, s), 7.76 (2H, d, *J* = 7.8 Hz), 7.71 (1H, d, *J* = 8.1 Hz), 7.64 (2H, td, *J* = 1.5 Hz, *J* = 7.5 Hz), 7.575 (1H, d, *J* = 7.5 Hz), 7.51 (1H, d, *J* = 7.8 Hz), 7.44 (1H, s), 7.36 (1H, t, *J* = 7.8 Hz), 7.19 (1H, d, *J* = 8.1 Hz), 7.14-7.09 (2H, m), 4.26 (2H, s), 4.10 (3H, s), 4.08 (3H, s), 3.95 (4H, s), 2.52 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 160.5, 160.1, 159.9, 152.3, 152.3, 150.8, 150.7, 148.9, 141.1, 139.8, 136.4, 136.0, 131.4, 125.9, 125.2, 124.6, 122.8, 121.9, 119.7, 119.5, 119.5, 115.2, 114.9, 110.8, 109.2, 60.3, 57.1, 57.0, 53.6, 21.9. TOF-MS ES^{+}(m/z): $[M+H]^{+}$ calcd for $C_{36}H_{32}N_5O_4$, 598.67; found, 598.96.

Synthesis of 19d



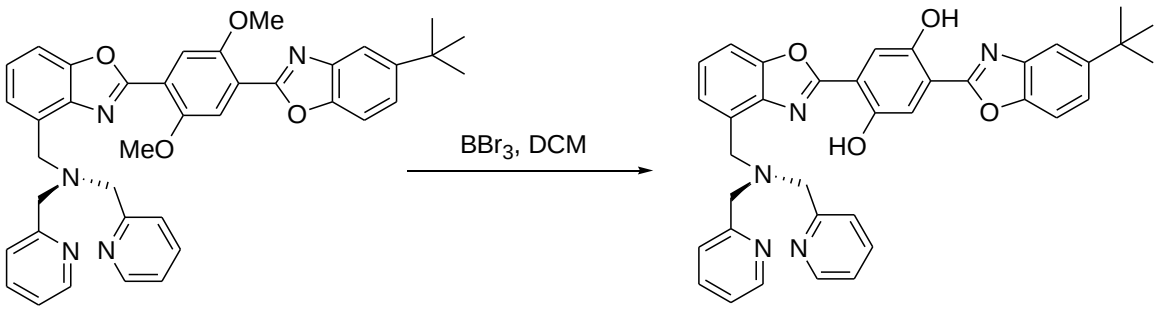
Compound **19d** was made according to the general procedure **E**. ^{1}H NMR (300 MHz, $CDCl_3$): 8.52 (2H, d, *J* = 4.5 Hz), 7.92 (1H,s), 7.89 (1H, s), 7.89-7.48 (1H, m), 7.78 (2H, d, *J* = 7.8 Hz), 7.67-7.62 (3H, m), 7.58 (1H, d, *J* = 8.1 Hz), 7.52 (1H, d, *J* = 8.1 Hz), 7.42-7.34 (4H, m), 7.15-7.10 (2H, m), 4.26 (2H, s), 4.12 (3H, s), 4.08 (3H, s), 3.96 (4H, s). HRMS (m/z): $[M+H]^+$ calcd for $C_{35}H_{30}N_5O_4$, 584.2298; found, 584.2316.

General procedure F



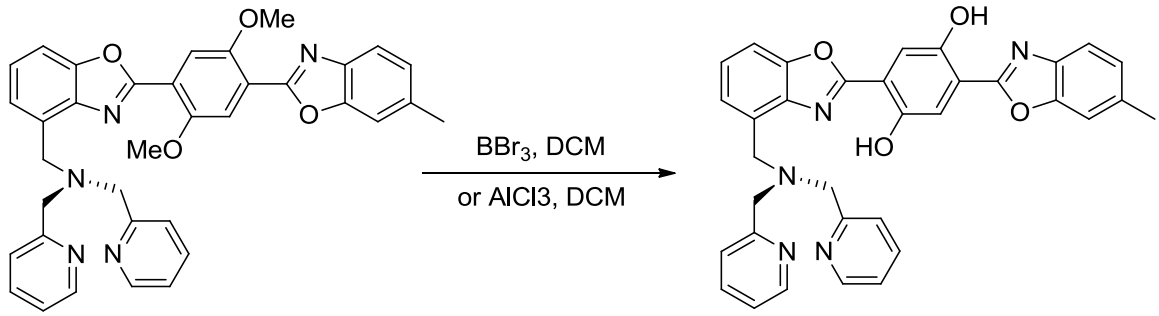
Compound **19** (0.5 mmol) was dissolved in anhydrous DCM, and the solution was cooled to -78℃. Then BBr_3 (1.2 mmol) was added slowly, and the resulting mixture was warmed to room temperature and stirred overnight. The reaction mixture was quenched by addition of water, and DCM layer was separated on a silica gel column in 72-78% yield.

Synthesis of 2b



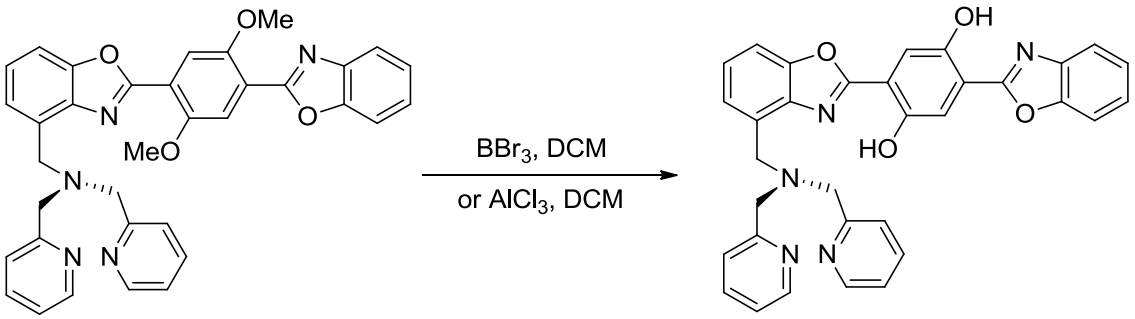
Compound **2b** was made according to the general procedure **F**. ^{1}H NMR (300 MHz, $CDCl_3$): 11.09 (1H, s), 11.01 (1H, s), 8.53 (2H, t, *J* = 1.2 Hz), 7.80 (3H, m), 7.72-7.62 (4H, m), 7.58-7.48 (4H, m), 7.40 (1H, t, *J* = 7.8 Hz), 7.15 (2H, m), 4.15 (2H, s), 3.91 (4H, d, *J* = 1.5 Hz), 1.42 (9H, tri, *J* = 1.2 Hz). ^{13}C NMR (75 MHz, $CDCl_3$): 161.9, 161.6, 159.6, 151.1, 150.9, 149.3, 149.0, 147.4, 140.0, 139.5, 136.6, 130.6, 126.1, 125.8, 123.9, 122.8, 122.0, 116.1, 114.9, 114.5, 110.0, 109.6, 60.4, 53.7, 35.1, 31.8.

Synthesis of 2c



Compound **2c** was made according to the general procedure **F**. ^{1}H NMR (300 MHz, $CDCl_3$): 11.00 (1H, s), 10.97 (1H, s), 8.53 (2H, t, *J* = 4.8 Hz), 7.74-7.64 (3H, m), 7.63-7.57 (1H, m), 7.53-7.49 (2H, m), 7.42 (1H, s), 7.35 (1H, tri, *J* = 7.8 Hz), 7.19-7.13 (2H, m), 4.12 (2H, s), 3.90 (4H, s), 2.51 (3H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 161.5, 161.3, 159.6, 150.9, 150.8, 149.6, 149.2, 149.0, 139.4, 137.8, 136.7, 136.5, 130.5, 126.5, 126.1, 125.7, 122.8, 121.9, 118.9, 114.8, 114.4, 114.4, 114.3, 110.9, 109.5, 60.3, 53.6, 21.8. HRMS (m/z): $[M+H]^+$ calcd for $C_{34}H_{28}N_5O_4$, 570.2141; found, 570.2169.

Synthesis of 2d



Compound **2d** was made according to the general procedure **F**. ^{1}H NMR (300 MHz, $CDCl_3$): 11.03 (2H, s), 8.53 (2H, d, J = 4.2 Hz), 7.81 (1H, s), 7.78 (1H, s), 7.76 (1H, m), 7.72-7.63 (6H, m), 7.54 (2H, m), 7.46-7.36 (4H, m), 7.15 (2H, m), 4.15 (2H, s), 3.91 (4H, s). ^{13}C NMR (75 MHz, $CDCl_3$): 161.8, 161.4, 159.6, 150.9, 149.3, 149.2, 149.0, 139.9, 139.4, 136.6, 130.5, 126.1, 125.9, 125.8, 125.2, 122.8, 122.0, 119.5, 114.6, 114.6, 110.8, 109.5, 60.3, 53.6. HRMS (m/z): $[M+H]^+$ calcd for $C_{33}H_{26}N_5O_4$, 556.1985; found, 556.1993.