Supporting Information

White Light Emissive Molecular Siblings

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Experimental Section

Materials and general methods:

BF₃.Et₂O, DDQ, Magnesium, anhydrous calcium hydride (CaH₂) were purchased from Sigma-Aldrich (USA). Pyrrole, 2-Bromothiophene, triethylamine, TFA, DMF were purchased from SD Fine Chemicals (India). CDCl₃ was purchased from Merck (Germany). Standard Schlenk technique was used for reactions requiring inert nitrogen atmosphere. CH₂Cl₂ was dried over CaH₂ and distilled under N₂ atmosphere. DMF was dried over Na₂SO₄ for overnight and distilled out at reduced pressure and stored over 3Å molecular sieves. THF and Et₂O were dried over sodium. Triethylamine was refluxed over sodium for 24 hours and distilled out at N₂ atmosphere and stored in an air tight stored round bottom flask. Bithiophene, 5-formyl-2,2΄-bithiophene were synthesis according literature procedure¹,². All 400MHz ¹H NMR, 125.7 ¹³C NMR Spectra were recorded by a Bruker Advance 400MHz NMR Spectrometer. Solution ¹H NMR and ¹³C NMR Spectra were referenced internally to the solvent signals. High resolution mass spectra were obtained from Q-TOF instrument by electrospray ionization (ESI). Electronic absorption spectra were recorded on a Perkin Elmer LAMBDA 750 UV/visible spectrophotometer. Solution ¹H NMR and ¹³C NMR Spectra were referenced internally to the solvent signals. High resolution mass spectra were obtained from Q-TOF instrument by electrospray ionization (ESI). Electronic absorption spectra were recorded on a Perkin Elmer LAMBDA 750 UV/visible spectrophotometer. Solution were prepared using a microbalance (± 0.1mg) and volumetric glassware and then charged in quartz cuvettes with sealing screw caps. Fluorescence emission studies were carried out on a Horiba JOBIN YVON Fluoromax-4 spectrometer.

Synthesis of 2

2-methyl-pyrrole (0.3 mL, 3.59 mmol) and borane-bithiophene-aldehyde (0.5 g, 1.13 mmol) were stirred at room temperature under nitrogen atmosphere for 30 min, then one drop BF₃·OEt₂ was added. The resultant mixture was stirred for another 6 h at room temperature and then DDQ (0.31 gm, 1.37 mmol) was added and stirred for additional 6 hours at room temperature. Then, Et₃N (1.6 ml, 11.46 mmol) was added and stirring was continued for another 1 hour. The resultant product was allowed to react with BF₃·OEt₂ (1.6 ml, 13 mmol) and the resultant mixture was stirred for 12 h. The crude product was extracted with dichloromethane and purified using column chromatography (ethyl acetate and petroleum ether (10:90)). Red color solid, Yield: 0.250 g, 35%. ¹H NMR (400 MHz, CDCl₃, δ in ppm) 7.39 (d, J = 8 Hz, 2H, thiophene C-H), 7.34 (2H, thiophene C-H ), 7.10 (d, J = 4 Hz, 2H, BODIPY C-H), 6.85 (s, 4H,
Ar C-H), 6.31 (d, J = 4 Hz, 2H, BODIPY C-H), 2.65 (s, 6H, -CH3), 2.32 (s, 6H, Mesitylene -CH3), 2.15 (s, 12H, Mesityl -CH3). \(^{13}\)CNMR (100.00 MHz, CDCl3, δ in ppm) 158.2 (BODIPY-C), 148.4 (Thiophene-C), 142.2 (Ar-C), 141.7 (Ar-C), 141.3 (Ar-C), 139.3 (BODIPY-C), 138.2 4 (Thiophene-C), 134.9 4 (Thiophene-C), 134.2 4 (Thiophene-C), 133.1 (BODIPY-C), 130.5 (Thiophene-C), 128.7 (BODIPY-C), 127.3 (Ar-C), 127.2 (Thiophene-C), 125.7 (BODIPY-C), 119.9 (BODIPY-C), 23.9 (Mesitylene-CH3-C), 21.7 (Mesitylene-CH3-C), 15.5 (BODIPY-CH3-C). \(^{19}\)F NMR (376 MHz, CDCl3, δ in ppm) -147.5 (q, J = 31.96 Hz). MALDI-Mass: M/Z= 631.282 [M] (28.2%), 613.274 [M-F] (100%).

**Synthesis of 3**

Compound 3 was prepared following a procedure similar to that of 2. The quantities involved and characterization data are as follows: borane-bithiophene-aldehyde (1.0g, 2.26 mmol), 2,4-dimethyl-pyrrole (0.52 ml, 4.97 mmol), DDQ (0.62 g, 2.71 mmol), Et3N (3.2 ml, 22.6 mmol), BF3•OEt2 (3.2 ml, 26 mmol. Red color solid. Yield: 550 mg, 37%. \(^1\)H NMR (400 MHz, CDCl3, δ in ppm) 7.38 (d, J = 3.6 Hz, 2H, thiophene C-H), 7.33 (d, J = 3.6 Hz, 2H, thiophene C-H), 7.28 (d, J = 3.6 Hz, 2H, thiophene C-H), 6.89 (d, J = 3.6 Hz, 2H, thiophene C-H), 6.84 (s, 4H, Ar C-H), 6.01 (s, 2H, BODIPY C-H), 2.55 (s, 6H, -CH3), 2.31 (s, 6H, Mesitylene -CH3), 2.16 (s, 12H, Mesitylene -CH3), 1.72 (s, 6H, -CH3). \(^{13}\)CNMR (100.00 MHz, CDCl3, δ in ppm) 156.8, 150.1, 148.9, 143.8, 141.8, 141.2, 140.0, 139.1, 135.0, 133.2, 132.7, 129.4, 128.6, 126.8, 125.4, 122.0, 23.9, 21.6, 15.1, 14.4. \(^{19}\)F NMR (376 MHz, CDCl3, δ in ppm) -146.2 (q, J = 32.33 Hz). MALDI-Mass: M/Z= 660.246 [M] (47.8%), 641.213 [M-F] (85.4%).
Spectral Characterization

Figure S1: $^1$H NMR of 2

Figure S2: $^{13}$C NMR of 2
**Figure S3:** $^{11}$B NMR of 2. $^{11}$B resonance of tricoordinated boron center could not be observed

**Figure S4:** $^{19}$F NMR of 2
Figure S5: MALDI-Mass of spectrum of 2

Figure S6: $^1$H NMR of 3
Figure S7: $^1$H of 3 (enlarge view of aromatic region)

Figure S8: $^{13}$C NMR of 3
Figure S9: $^{11}$F NMR of 3

Figure S10: $^{11}$B NMR of 3
Figure S11: MALDI-Mass of spectra 3

Figure S12: Excitation spectra of 2 (left) (\(\lambda_{\text{em}}\) 525 nm) and 3 (right) (\(\lambda_{\text{em}}\) 600 nm) in DCM
**Figure S13:** Concentration Variation UV-Vis Spectra of 2 (left) and 3 (right) in DCM

**Figure S14:** Concentration Variation Emission Spectra of 2 (left) and 3 (right) ($\lambda_{ex} = 350$ nm in DCM)
Figure S15: Absorption spectra of 2 (left) and 3 (right) in different solvents ($10^{-5}$M)

Figure S16: Emission spectra of 2 (left) and 3 (right) in different solvents ($\lambda_{ex} = 350$ nm, $10^{-5}$M)
Figure S17: Emission spectra of 2 (left) and 3 (right) on different excitations (10⁻⁵M in DCM)

Figure 18. Photographs of different colour emission from different molar ratio of 2 and 3 in CH₂Cl₂ under UV light (365 nm).