SUPPORTING INFORMATION

Synthesis and photophysical properties of novel butterfly-shaped blue emitters based on pyrene

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Figure S1-1. $^1$H NMR spectrum of 4a (300 MHz, CDCl$_3$, 293 K).

Figure S1-2. $^{13}$C NMR spectrum of 4a (75 MHz, CDCl$_3$, 293 K).
Figure S1-3. $^1$H NMR spectrum of 4b (400 MHz, CDCl$_3$, 293 K).

Figure S1-4. $^{13}$C NMR spectrum of 4b (100 MHz, CDCl$_3$, 293 K).
Figure S1-5. $^1$H NMR spectrum of 4c (300 MHz, CDCl$_3$, 293 K).

Figure S1-6. $^{13}$C NMR spectrum of 4c (75 MHz, CDCl$_3$, 293 K).
Figure S1-7. $^1$H NMR spectrum of 4d (300 MHz, CDCl$_3$, 293 K).

Figure S1-8. $^{13}$C NMR spectrum of 4d (100 MHz, CDCl$_3$, 293 K).
Figure S1-9. $^1$H NMR spectrum of 4e (300 MHz, CDCl$_3$, 293 K).

Figure S1-10. $^{13}$C NMR spectrum of 4e (100 MHz, CDCl$_3$, 293 K).
Figure S1-11. $^1$H NMR spectrum of 4f (300 MHz, CDCl$_3$, 293 K).

Figure S1-12. $^{13}$C NMR spectrum of 4f (100 MHz, CDCl$_3$, 293 K).
Figure S1-13. $^1$H NMR spectrum of 5 (400 MHz, CDCl$_3$, 293 K).

Figure S1-14. $^{13}$C NMR spectrum of 5 (100 MHz, CDCl$_3$, 293 K).
Figure S1-15. $^1$H NMR spectrum of 6 (400 MHz, CDCl$_3$, 293 K).

Figure S1-16. $^{13}$C NMR spectrum of 6 (100 MHz, CDCl$_3$, 293 K).
Photophysical Analysis

Figure S2-1. UV/Vis absorption (left) and fluorescence spectra (right) of the compound 4a recorded in different solvents at ~$10^{-5}$ M and 25 °C.

Figure S2-2. UV/Vis absorption (left) and fluorescence spectra (right) of the compound 4b recorded in different solvents at ~$10^{-5}$ M and 25 °C.

Figure S2-3. UV/Vis absorption (left) and fluorescence spectra (right) of the compound 4c recorded in different solvents at ~$10^{-5}$ M and 25 °C.
Figure S2-4. UV/Vis absorption (left) and fluorescence spectra (right) of the compound 4d recorded in different solvents at ~10^-5 M and 25 °C.

Figure S2-5. UV/Vis absorption (left) and fluorescence spectra (right) of the compound 4e recorded in different solvents at ~10^-5 M and 25 °C.

Figure S2-6. UV/Vis absorption (left) and fluorescence spectra (right) of the compound 4f recorded in different solvents at ~10^-5 M and 25 °C.
Figure S2-7. UV/Vis absorption (left) and fluorescence spectra (right) of the compound 5 recorded in different solvents at $\sim 10^{-5}$ M and 25 °C.

Figure S2-8 Effect of concentration on the UV/Vis (left) and fluorescence emission (right) of 4a in CH$_2$Cl$_2$ at 25 °C.

Figure S2-9 Effect of concentration on the UV/Vis (left) and fluorescence emission (right) of 4b in CH$_2$Cl$_2$ at 25 °C.
Figure S2-10 Effect of concentration on the UV/Vis (left) and fluorescence emission (right) of 4c in CH$_2$Cl$_2$ at 25 °C.

Figure S2-11 Effect of concentration on the UV/Vis (left) and fluorescence emission (right) of 4d in CH$_2$Cl$_2$ at 25 °C.

Figure S2-12 Effect of concentration on the UV/Vis (left) and fluorescence emission (right) of 4e in CH$_2$Cl$_2$ at 25 °C.
Figure S2-13 Effect of concentration on the UV/Vis (left) and fluorescence emission (right) of 4 in CH$_2$Cl$_2$ at 25 °C.

Figure S2-14 Effect of concentration on the UV/Vis (left) and fluorescence emission (right) of 5 in CH$_2$Cl$_2$ at 25 °C.
The DSC curve of compounds 4a–f

Figure S3-1
Electrochemistry Analysis

Figure S4-1 Cyclic voltammogram for compound 5.
Quantum Chemistry Computation

Figure S4-1. Computed molecular orbital plots (B3LYP/6-31G*) of the compound 4a. The left plots represent the HOMOs, and the right plots represent the LUMOs.

Figure S4-2. Computed molecular orbital plots (B3LYP/6-31G*) of the compound 4c. The left plots represent the HOMOs, and the right plots represent the LUMOs.
Figure S4-3. Computed molecular orbital plots (B3LYP/6-31G*) of the compound 4f. The left plots represent the HOMOs, and the right plots represent the LUMOs.

Figure S4-4. Computed molecular orbital plots (B3LYP/6-31G*) of the compound 6. The left plots represent the HOMOs, and the right plots represent the LUMOs.