**Instruments and methods**

$^1$H NMR spectra were recorded on a VNMRS 400 NMR spectrometer (Varian, USA). High resolution mass spectra (HR-MS) were recorded using an Autoflex III mass spectrometer (MALDI-TOF-MS, Bruker, Germany). TGA analysis was performed on a NETZSCH SA409PC thermogravimeter. DSC measurements were carried out on a NETZSCH DSC 200F3 instrument at a heating rate and a cooling rate of 10 °C min$^{-1}$ in nitrogen. UV-Vis spectra were recorded using a UV-2600 spectrometer (Shimadzu, Japan). Fluorescence spectra were recorded using a F-7000 fluorescence spectrometer (Hitachi, Japan). Absolute quantum efficiency was measured on an integrating sphere (C11347-11, Hamamatsu, Japan). Fluorescence lifetime was measured on a compact fluorescence lifetime spectrometer (C11367-11, Hamamatsu, Japan). Powder X-ray diffraction (PXRD) patterns were carried out in the reflection mode at room temperature using a 2.2 kW Empyrean X-ray Diffraction System (PANalytical, Netherland). The ML spectra were collected from a spectrometer of Acton SP2750 with a liquid-nitrogen-cooled CCD (SPEC-10, Princeton) as a power detector (data-collection time is 1s and the diameter of optical fiber is 600 μm). The theoretical ground-state geometry and electronic structure of molecule was optimized using the density functional theory (DFT) with B3LYP hybrid functional at the basis set level of 6-31+G(d). All the theoretical calculations were performed using Gaussian 03 package.$^1$

**Preparation of 1.$^2$** 1-(4-Bromophenyl)-1,2,2-triphenylethylene (1 g, 2.43 mmol) was firstly placed in a 50 mL round bottom flask. The flask was evacuated under vacuum and flushed with nitrogen three times. THF (20 mL) was then added. The mixture was cooled to -78 °C and n-BuLi (2.5 M, 1.17 mL, 2.92 mmol) was slowly added. After the mixture was stirred for 3 h at -78 °C, trimethyl borate (542 μL, 4.86 mmol) was injected. After 3 h, the mixture was slowly warmed to room temperature. HCl (2 M, 10 mL) solution was added and the mixture was stirred for another 3 h. Then the reaction mixture was diluted with CH$_2$Cl$_2$, washed with water and brine, dried over Na$_2$SO$_4$. The solvents were removed under reduced pressure. The residue was purified
by chromatography on a silica gel column (DCM/EtOAc = 4/1, v/v) to yield the compound 1 (383 mg, 42.1%) as white powder. $^1$H NMR (400 MHz, DMSO-d$_6$): $\delta =$ 7.94 (s, 2H), 7.53 (d, $J = 8.0$ Hz, 2H), 7.07-7.16 (m, 9H), 6.92-6.99 ppm (m, 8H); $^{13}$C NMR (100 MHz, DMSO-d$_6$): $\delta =$ 144.88, 143.18, 143.15, 140.67, 133.62, 130.65, 129.69, 127.83, 126.59, 126.56 ppm; element analysis calcd. (%) for C$_{26}$H$_{21}$BO$_2$: C 83.00; H 5.63; found: C 83.42; H 5.52.
Figure S1. (a) Absorption of 1 in THF solution (10 μM). (b) Plots of $I/I_0$ versus water fractions of 1, where $I_0$ is the emission intensity at 460 nm in THF (10 μM). Inset: fluorescence images at $f_w = 0\%$ and $99\%$.

Figure S2. The HOMO and LUMO orbital distribution of 1 calculated by B3LYP/6-31+G(d).
**Table S1. Optical properties of compound 1 in various solid forms.**

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<sup>a</sup>Emission maximum. <sup>b</sup>Fluorescence quantum yield determined by using a calibrated integrating sphere. <sup>c</sup>Fluorescence lifetime. <sup>d</sup>Not determined.

**Figure S3.** UV-Vis reflection spectra of different states of 1.
Figure S4. Fluorescence decay curves of ground powder (1g), fumed powder (1f) and heated powder (1h) of 1.
Figure S5. Maximum emission wavelength changes of 1 cast weighing paper versus (a) grinding/heating, (c) heating/methanol fuming and (e) methanol fuming /grinding cycles. PXRD patterns of 1 during (b) grinding/heating, (d) heating/methanol fuming and (f) methanol fuming /grinding cycles.
Figure S6. TG and DTA curves of 1 measured at a heating rate of 10 °C/min under nitrogen atmosphere.

Figure S7. DSC curves of the as-prepared powder (1o), ground powder (1g), fumed powder (1f) and heated powder (1h).
Table S2. Single crystal data of 1c.

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Figure S8. Two kinds of molecular conformations in single crystal 1c. Every boric acid group in one molecule has two possible positions by virtue of disorder distribution.

Figure S9. (a) Normalized fluorescence spectra and (b) PXRD patterns of 1g and 1r.
Figure S10. $^1$H NMR of compound 1.

Figure S11. $^{13}$C NMR of compound 1.
Reference
