Supporting Information

Single Crystal Fluorescence Behavior of a New HOF Material: Potential Candidate for a New LED

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Figure S1. (A) Infrared spectra of T12, T12-ester and T12-apo in solid state. (B) and (C) SEM images of T12-apo in solid state.

Figure S2. Emission (A-C) spectra and decays (A’-C’) of small crystals of T12. The excitation wavelength was 390 nm, and the decays were recorded over the whole spectral range using a 430 nm long-pass filter. The solid lines are from the best-fit using a monoexponential function. The insets in (A-C) show the FLIM images of the crystals.
Figure S3. Emission (A-C) spectra and decays (A’-C’) of large crystals of T12. The excitation wavelength was 390 nm, and the decays were recorded over the whole spectral range using a 430 nm long-pass filter. The solid lines are from the best-fit using a monoexponential function. The insets in (A-C) show the FLIM images of the crystals.
Figure S4. Emission (A-C) spectra and decays (A’-C’) of small crystals of T12-Ester. The excitation wavelength was 390 nm, and the decays were recorded over the whole spectral range using a 430 nm long-pass filter. The solid lines are from the best-fit using a monoexponential function. The insets in (A-C) show the FLIM images of the crystals.
Figure S5. Emission (A-D) spectra and decays (A’-D’) of large crystals of T12-Ester. The excitation wavelength was 390 nm, and the decays were recorded over the whole spectral range using a 430 nm long-pass filter. The solid lines are from the best-fit using a monoexponential function. The insets in (A-D) show the FLIM images of the crystals.
Figure S6. Emission (A-D) spectra and decays (A’-D’) of small crystals of T12-apo. The excitation wavelength was 390 nm, and the decays were recorded over the whole spectral range using a 430 nm long-pass filter. The solid lines are from the best-fit using a monoexponential function. The insets in (A-D) show the FLIM images of the crystals.
Figure S7. Emission (A-B) spectra and (C-D) decays of large crystals of T12-apo. The excitation wavelength was 390 nm and the decays are measured at selected spectral range using two different filters. For region 1, we used a FF01-503/40 Chroma filter, and for region 2 we used a 530 nm long-pass filter (HQ530LP, Chroma). The solid lines are from the best-fit using a multieponential function. The insets of (A) and (B) show the FLIM images of the large crystals.
Figure S8. Histograms of the emission anisotropy for (A-C) 1 and (A’-C’) 2 positions of T12-apo crystal. The solids lines are from the Gaussian distribution fits, showing two different populations of the emitters. The related data are given in table S1. The images show the 1 and 2 positions of the crystals. The excitation wavelength was 390 nm and the anisotropy was measured over the whole spectral range using a 430 nm long-pass filter.
**Figure S9.** Histograms of the emission anisotropy for (A) 1 and (B) 2 positions of T12-apo crystal with respect to the plane of observation. The images show the 1 and 2 positions of the crystals. The excitation wavelength was 390 nm and the anisotropy was measured over the whole spectral range using a 430 nm long-pass filter.

**Figure S10.** Histograms of the emission anisotropy value using two crystals of T12-Ester crystals. The excitation wavelength was 390 nm and the anisotropy was measured over the whole spectral range using a 430 nm long-pass filter. Insets: Images of the explored crystals.
Table S1. Obtained values from the deconvolution of the histogram of the emission anisotropy for the 1 and 2 orientations of the crystals, shown in Figures 6 and S8. The excitation wavelength was 390 nm and the anisotropy was measured over the whole spectral range using a 430 nm long-pass filter.