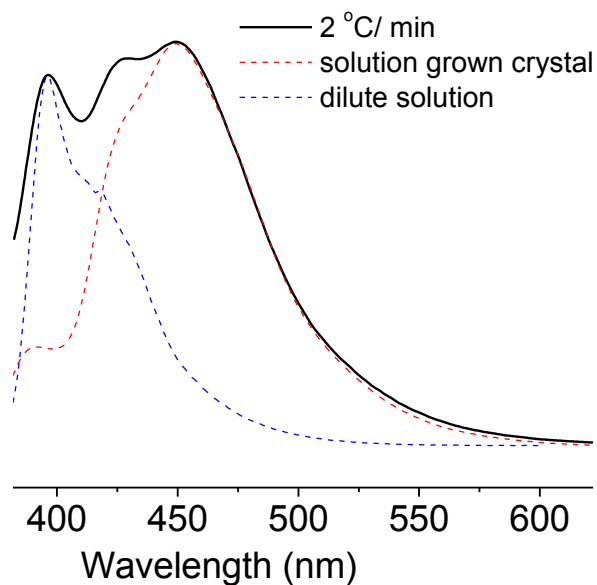


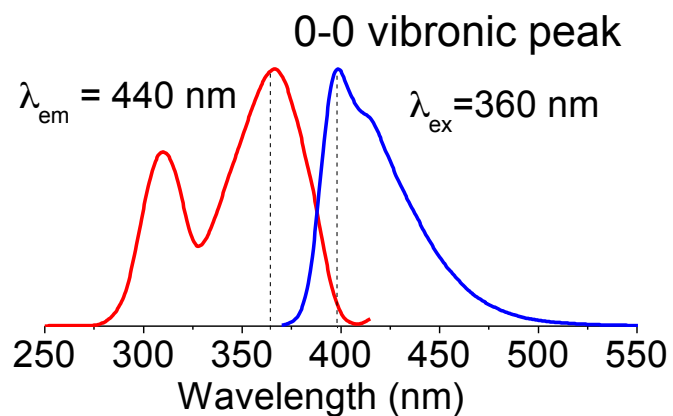
Supporting Information

Fig. S1 The emission spectra of the dilute DMPE solution, crystals grown from solution and a melt-cooled DMPE film (2 °C/min; excitation wavelength, 360 nm). Spectral intensities have been adjusted for the sake of illustration.



In contrast to the solution spectrum, the broad emission peak at 444 nm dominates for the crystalline powder obtained from solution grown crystal due to the aggregation and intermolecular interaction effects. The emission spectrum of 2 °C/min cooled film bears similarity to both the dilute solution spectrum and that from the solution grown crystals.

Fig. S2 The excitation and emission spectra for (5 μ M) toluene solution of DMPE (emission wavelength of 440 nm and excitation at 360 nm).

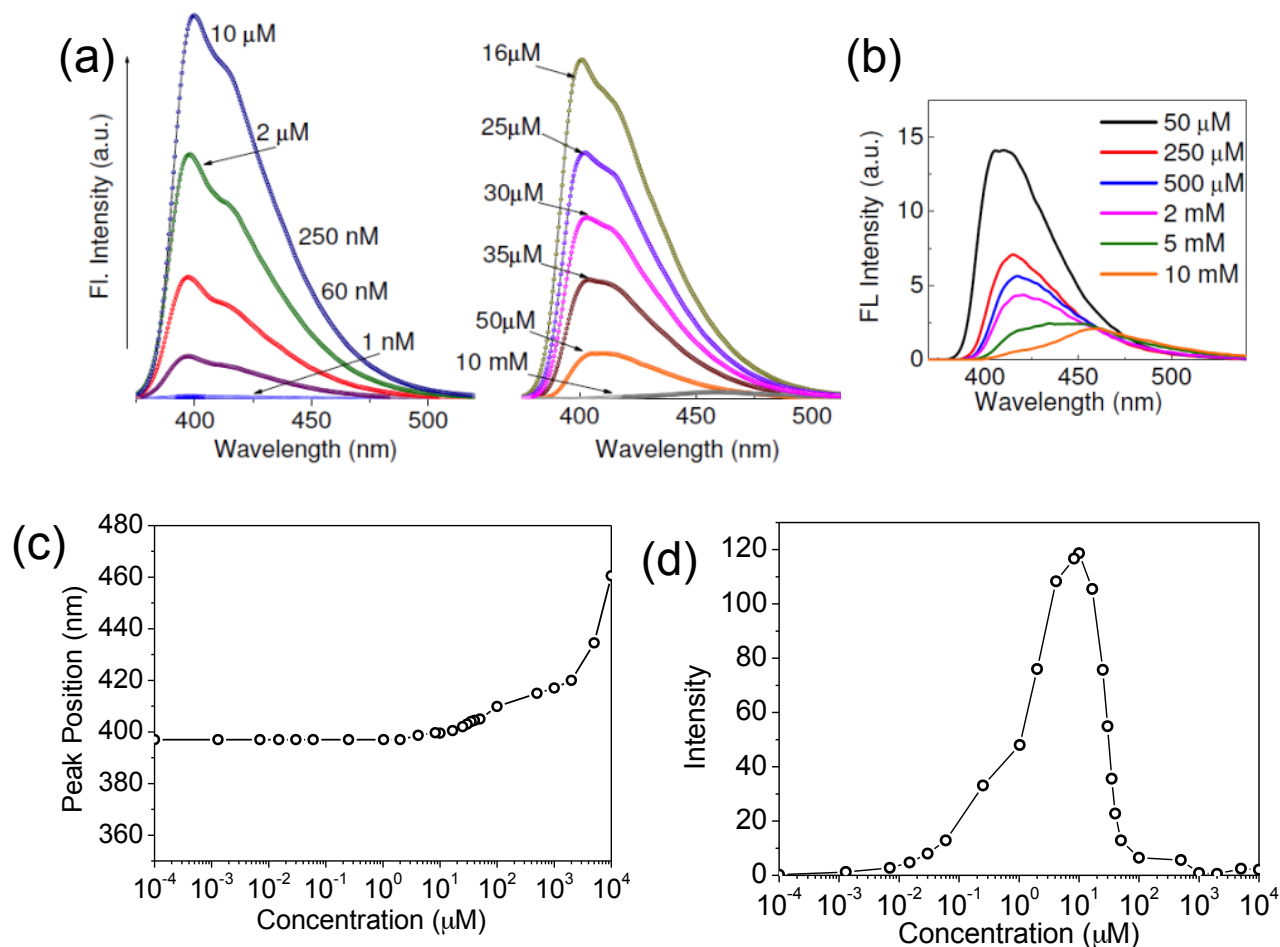


The emission peak at 397 nm overlaps with the excitation band of 368 nm. This band is assigned to be 0-0 vibronic transition. (1)

Reference:

1. Q. Chu, Y. Pang, *Spectrochimica Acta Part A*, 2004, 60,1459.

Fig. S3 (a) Emission spectra of **DMPE** in solution of different concentrations (b) the emission spectra magnified for the concentration region, 50 μM to 10 mM (c) the variation of maximum intensity peak position with concentration (d) the variation in intensity of peak centered at 400 nm for different concentrations (recorded using excitation wavelength at 360 nm).



As the concentration of solution increases from 1 nM to 10 μM , there is an increase in intensity of the 397 nm peak (Fig. S1a, left). Above 10 μM , the intensity decreases exponentially with a red shift in the peak (Fig. S1b and c). The shift in the peak position at higher concentrations is attributed to aggregation. The intensity variations are clearly seen in Fig. 1d.

Fig. S4 Excitation spectra recorded for films formed with different cooling rates (emission collected at 440 nm).

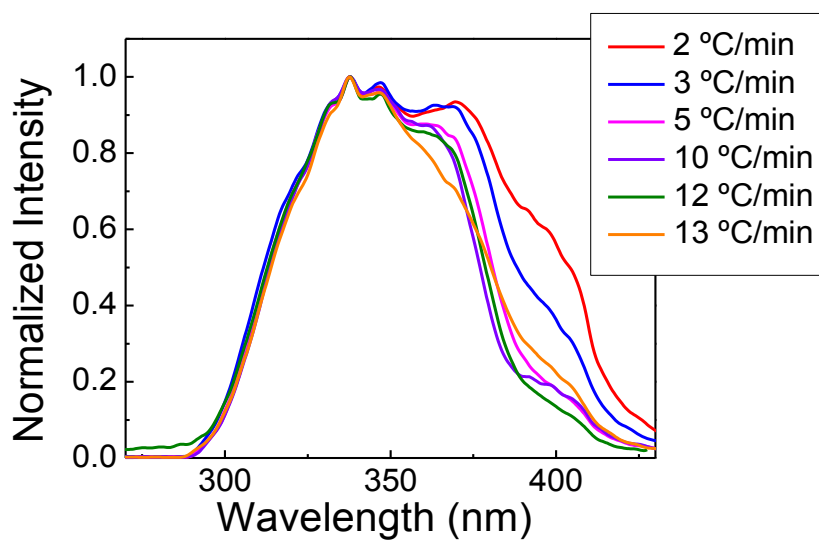
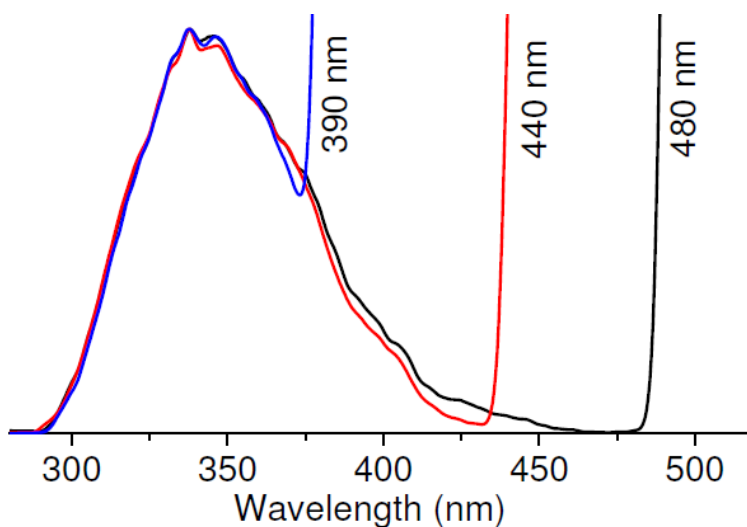


Fig. S5 Excitation spectra corresponding to 13 °C/min cooled film for different emission wavelengths (390, 440 and 480 nm).



The excitation spectra are very similar in spectral shape and relative peak intensities.

Fig. S6 Simulated XRD pattern of DMPE based on the single crystal data (CCDC ref. code RURQOL).

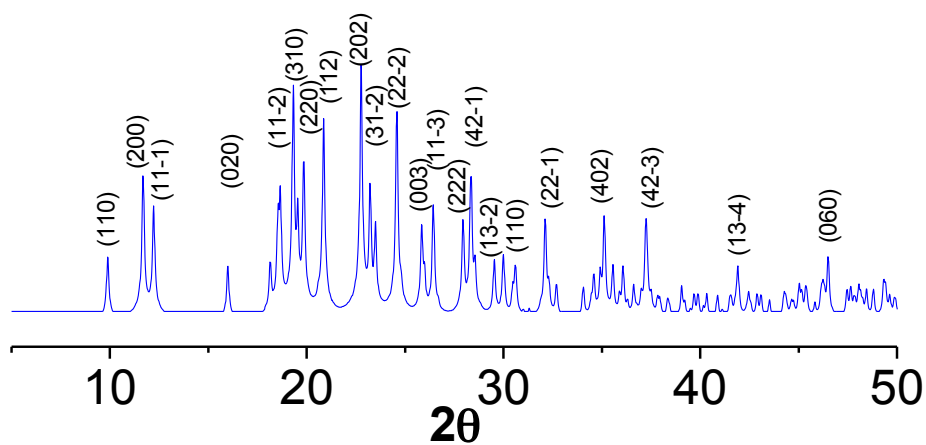


Fig. S7 Excitation spectra recorded for a 1 °C/min and rapidly cooled film (>15 °C/min) (emission collected at $\lambda = 480$ nm).

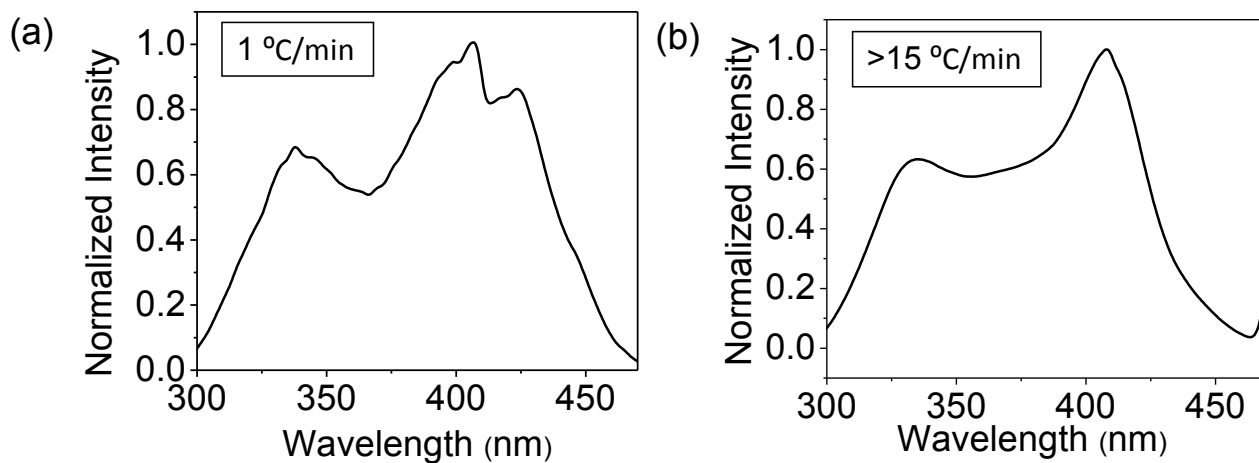


Fig. S8 Excitation spectra of 1 °C/min melt cooled DMPE film recorded at emission wavelengths of 450 and 490 nm.

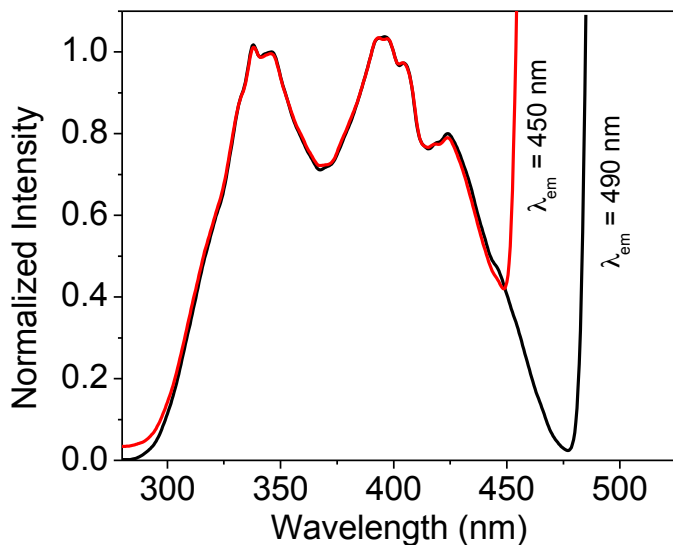


Fig. S9 The normalized emission spectrum for film cooled at ~ 1.5 °C/min along with those of 1 °C/min and 2 °C/min. The spectral features have been normalized to the peak maxima for clarity.

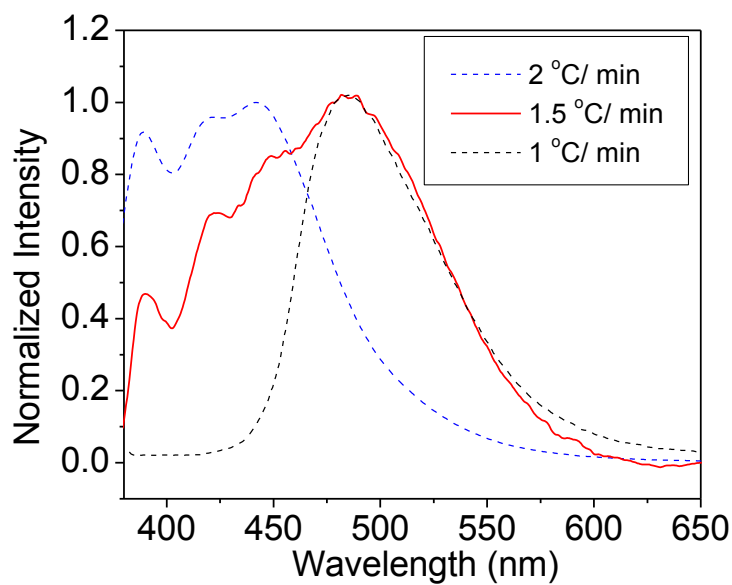


Table S1: Thermal Diffusivity Values of Different Solvents

	Solvent	Thermal Conductivity (W/mK)	Specific Heat Capacity (kJ/ kgK)	Density (kg/m ³)	Thermal Diffusivity* (m ² /s)	Emission peak (nm)
1	Acetone	0.18	2.15	0.784	8.436×10^{-5}	487
2	CHCl ₃	0.129	1.05	1.489	8.249×10^{-5}	481
3	Ethanol	0.17	2.72	0.785	7.961×10^{-5}	474

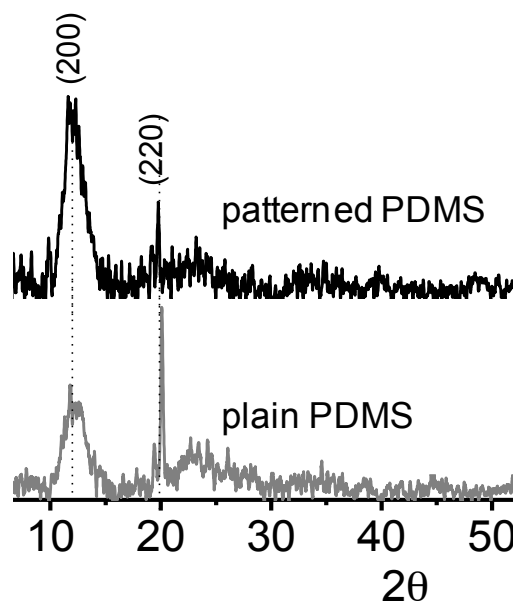
$$\text{Thermal Diffusivity} = (\text{Thermal Conductivity}) / (\text{Specific heat Capacity} \times \text{Density})$$

The value of thermal diffusivity depends on the thermal conductivity, specific heat capacity and density of the solvent. (1) From the values tabulated above, it is observed that the emission is blue shifted with increasing value of thermal diffusivity of the medium (solvent).

Reference:

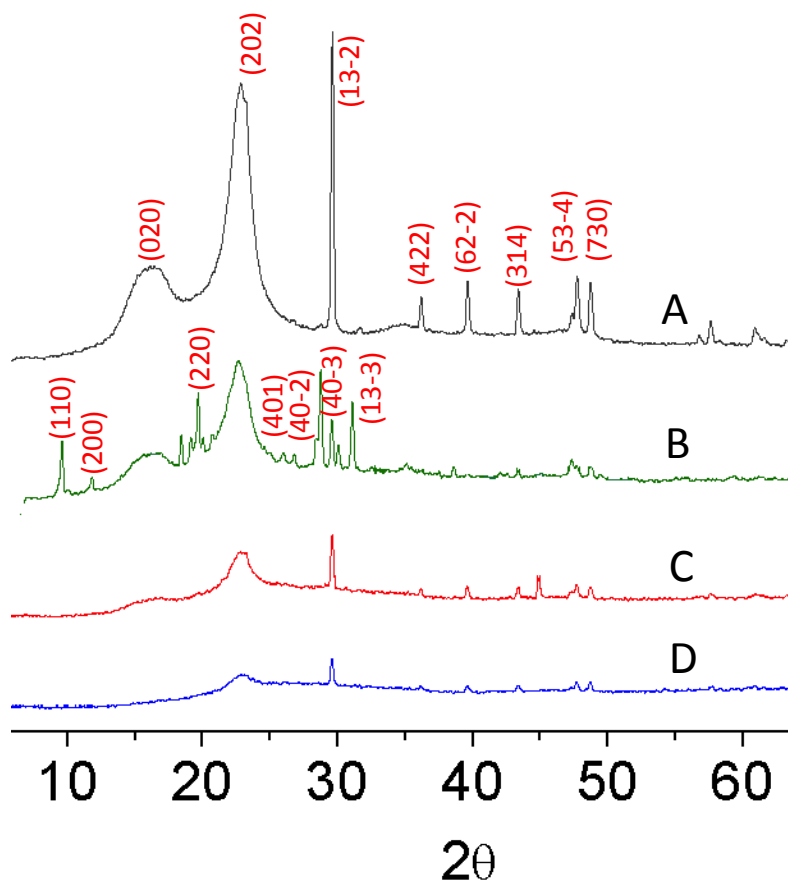
- (1) D. R. Lide, Ed., CRC handbook of Chemistry and Physics, 85th ed., CRC Press, Boca Raton, FL, 2005; chapter 2, 57.

Fig. S10 The powder X-ray diffraction pattern of DMPE crystals on patterned and plain PDMS substrate.



The X-ray diffraction (XRD) analysis of these samples showed 2 major peaks at 11.98° and 20.1° corresponding to the (200) and (220) planes respectively, but with differing relative intensities. The peak corresponding to (200) plane has higher intensity as compared to (220) plane in case of plain PDMS. The (200)/(220) peak intensity ratio on patterned surface is calculated to be 2.8 times higher than the ratio on plain PDMS substrate. Further, the peak corresponding to (200) plane showed pronounced broadening which is attributable to varying crystallite size. The crystallite size calculated using Scherrer formula was found to be ~ 3.4 and 2.9 nm for crystals on patterned and plain PDMS respectively. The difference in crystallization on patterned surface could be due to the mechanical strain and confinement exerted by the line patterns during the crystal growth.

Fig. S11 XRD patterns of A, B, C and D films labeled according to simulated XRD pattern CCDC (ref. code RURQOL).



The XRD patterns of DMPE crystals grown on coverslips of varying roughnesses show prominent differences. With increasing roughness, the X-ray diffraction peak intensities diminish indicating a decrease in the degree of crystallinity. The (020) and (202) peaks are somewhat broad. This points to a situation where there is a preferred orientation and the crystals with these orientations must be very small (< 50 nm). The higher order planes also disappear for the film D with high surface roughness. The rough surface is known to reduce the grain size of the organic crystals as also seen in the literature (1-2). As the surface roughness increases, the aggregation is reduced leading to a blue shifted emission.

References:

1. S. E. Fritz et al., *J. Phys. Chem. B* **2005**, 109,10574
2. K. Shin et al., *Appl. Phys. Lett.*, **2006**, 88,072109.