Supporting Information for

A facile strategy for new organic White LED hybrid devices: design, features and engineering.

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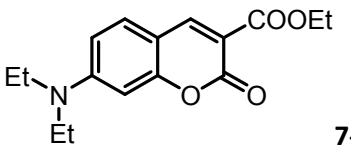
Materials

^{1}H NMR spectra were recorded on 400 and 500 MHz Varian spectrometers at 27°C using $CDCl_3$ as solvent. ^{13}C NMR were recorded at 101 and 126 MHz at 27°C using $CDCl_3$,. Chemical shifts (δ) are given in ppm. Coupling constants (*J*) are reported in Hz. Yields refer to chromatography and spectroscopically pure materials.

coumarin Dye -1 NMR data



7-Diethylamino-2-oxo-2H-chromene-3-carboxylic acid ethyl ester. Mp 85-87 °C. ^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.41 (s, 1H) 7.35 (d, *J* =9.0 Hz 1H) 6.61 (dd, *J* = 9.0 ,2.3 Hz, 1H) 6.43 (d , *J* =2,0 Hz, 1H 4.37 (q, *J* = 7.1 Hz 2H) 3.45 (q, *J* = 7.1 Hz 4H) 1,39 (t, *J* =7.1 Hz, 3H) 1.23 (t, *J* = 7.2 Hz 6H); ^{13}C NMR (126 MHz, $CDCl_3$) δ: 163,9, 158,2, 158.0 152.7 148.9 130.8 109.3 108.5 107.4 96.4 60.8 44.9 14.18 12.23; Spectroscopic data are in accordance with the previously presented [1a]; ESI mass calc. for $C_{16}H_{19}NNaO_4$: 312.1212 , found: (M+Na) 312.1205.

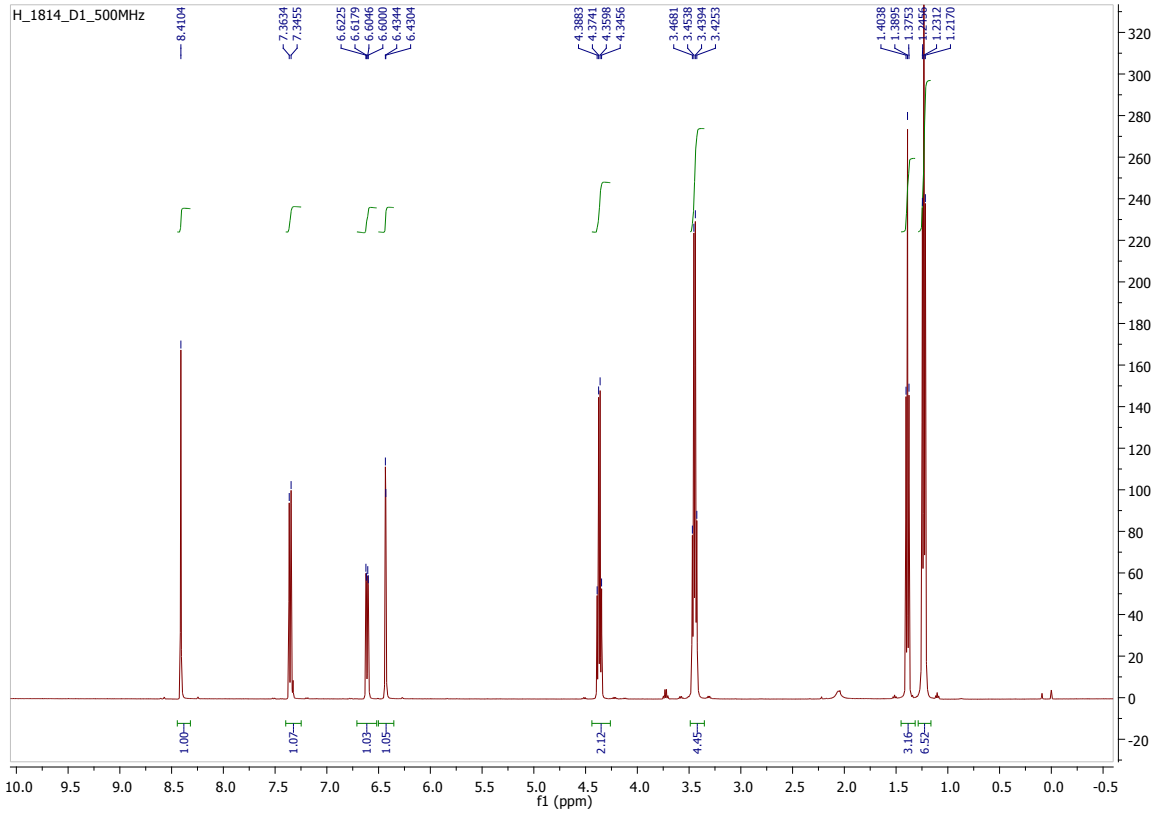


Figure S1A Dye 1 ^{1}H-NMR spectrum,

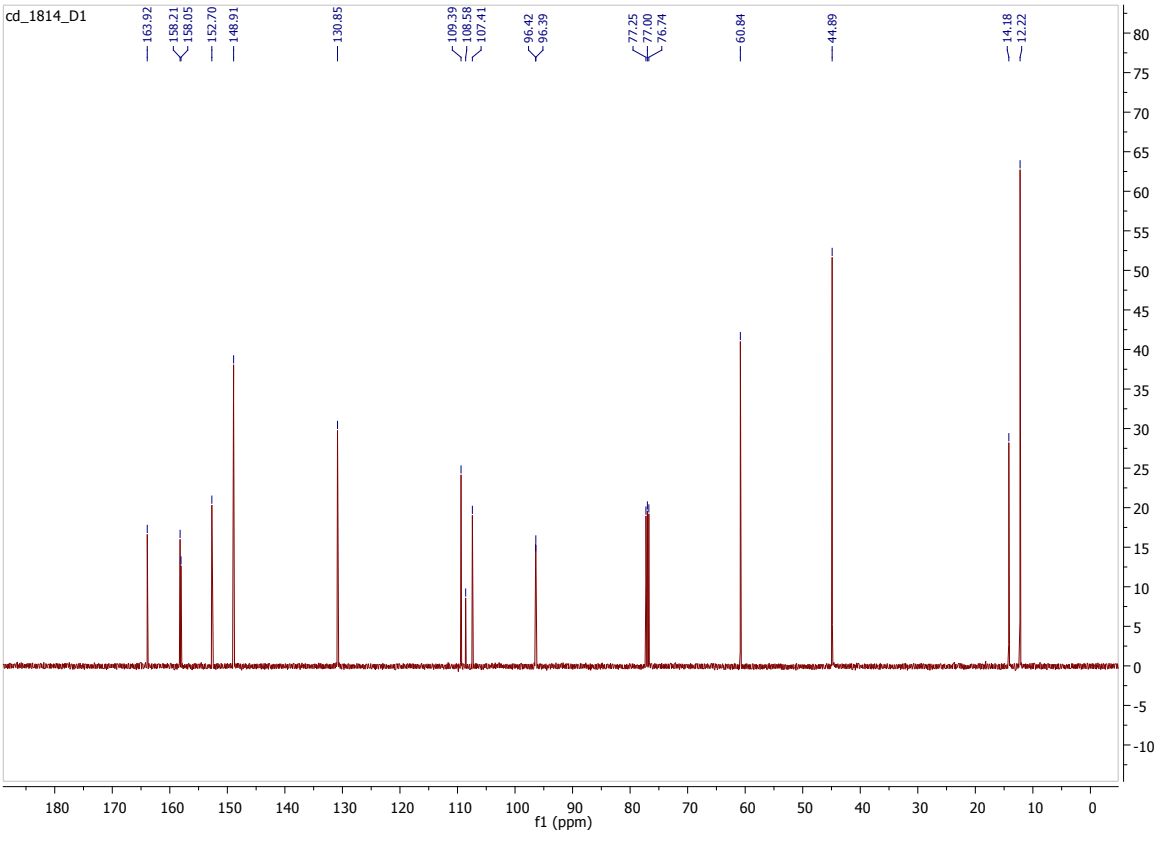


Figure S1B – dye 1 ^{13}C-NMR spectrum

Quantum Yield Measurements (ϕ_f)

Absolute quantum yield fluorescence were obtained by absorption and emission measurements with respect to reference sample. Considering the emission wavelength of the Dye -1 at about 450 nm and between 350 and 450 nm, the chosen reference solution of Coumarin 153 in EtOH was chosen.

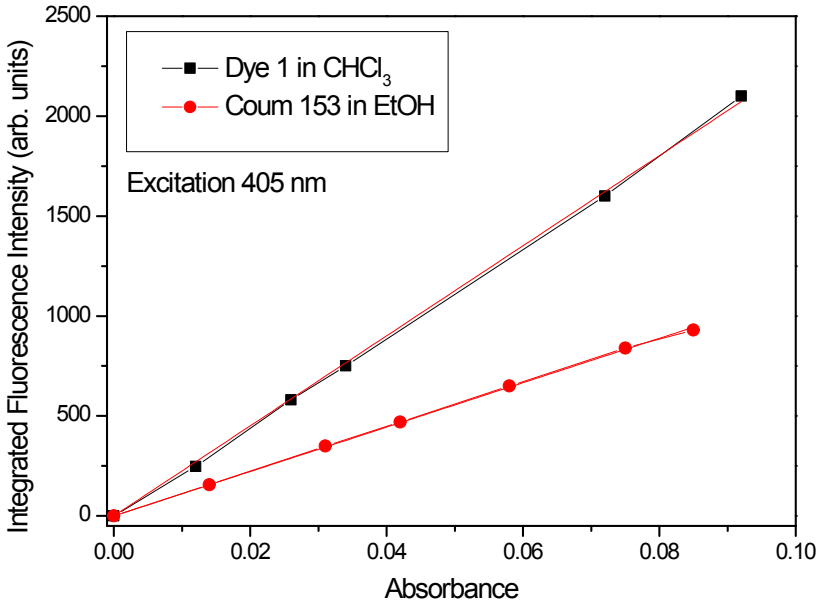
The Quantum Yield can be calculated by the equation:

$$\phi_f = \frac{m_f}{m_{st}} \frac{n_f^2}{n_{st}^2} \phi_{st}$$

Where subscripts of *f* and *std* denoted test and standard condition; m is the gradient from the plot of the integrated fluorescence intensity vs the absorbance at the excitation wavelength; n is the refractive index of solvents.

In order to minimize re-absorption and non-linear effects, the concentration of the solution were chosen in order that absorbance values remain always below 0.1

Figure S2 reports Abs vs integrated luminescence for Dye -1 in $CHCl_3$ solution and for Coumarine 153 in EtOH. Table S1 reports the value utilized for the calculation of the **quantum yield (ϕ_f =0.91).**



m_{st}	m_x	n_{st}	n_x	ϕ_{std}
11105	22736	1.34	1.45	0.38

Figure S3 Normalized light output intensity as a function of the working time (device C in Figure 10). The emission spectra did not change during the exposed time (inset).

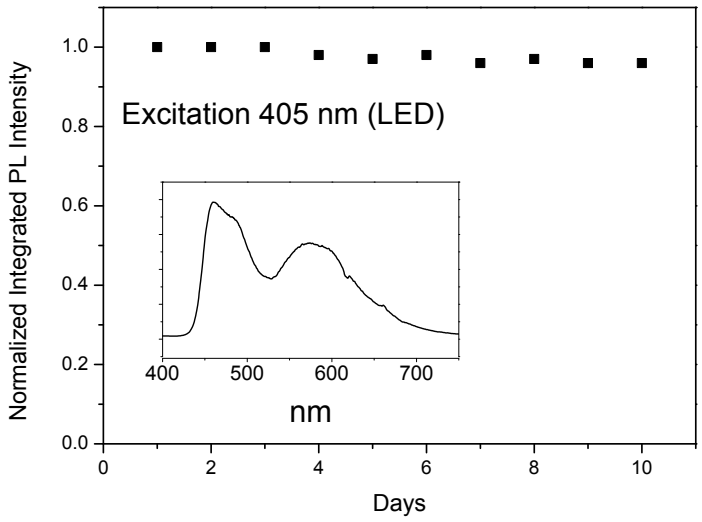


Figure S4 Luminescence intensity vs film temperature.