SUPPORTING INFORMATION FOR

Photophysics of Xanthene Dyes at High Concentrations in Solid Environments: Charge Transfer Assisted Triplet Formation

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Table S1. Sample concentrations (μmol g^{-1}) and sample color convention.

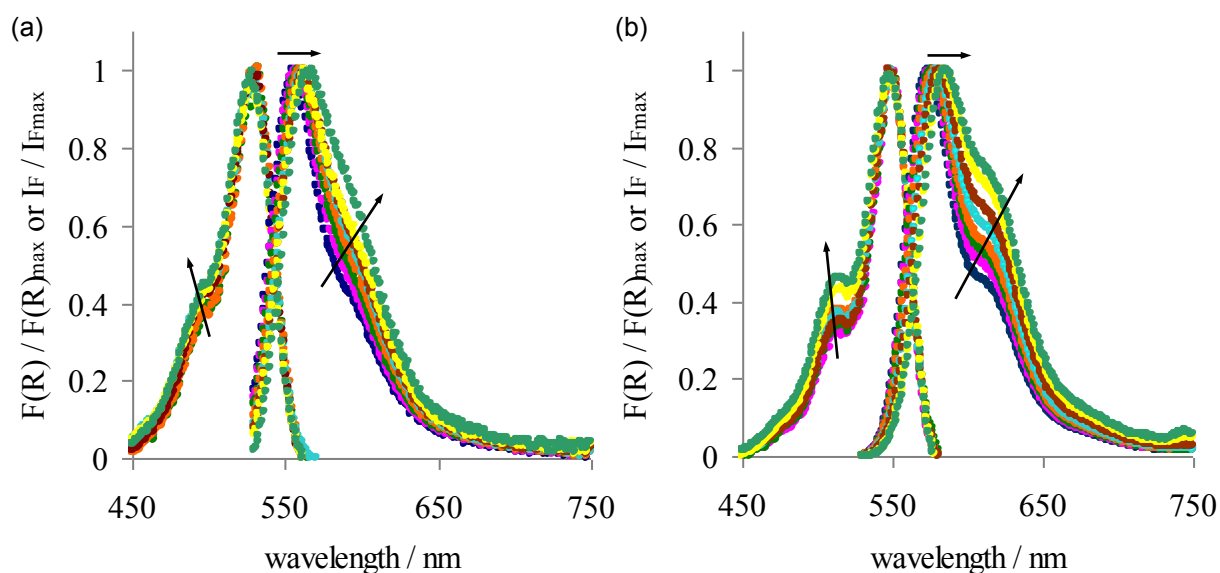|	Eosin Y (EoY)	Phloxine B (PhB)
1	0.042	0.053
2	0.090	0.11
3	0.16	0.16
4	0.32	0.32
5	0.64	0.77
6	1.3	1.5
7	2.7	3.0
8	4.2	4.2

Figure S1. (a) Normalized remission function ([dye] > 0.1 μmol g^{-1}) and fluorescence (all, λ_{ex} = 505 nm) spectra of optically thick layers of EoY. Arrows indicate increasing concentrations. Data was adapted from [Rodríguez, H. B., E. San Román, P. Duarte, I. Ferreira Machado, and L. F. Vieira Ferreira (2012) Eosin Y triplet state as a probe of spatial heterogeneity in microcrystalline cellulose. *Photochem. Photobiol.* **88**, 831-839]. **(b)** Normalized remission function ([dye] > 0.1 μmol g^{-1}) and fluorescence (all, λ_{ex} = 500 nm) spectra of optically thick layers of PhB. Arrows indicate increasing concentrations.
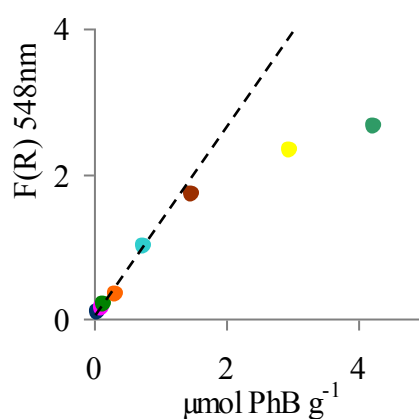

Figure S2. Remission function at maximum for PhB as a function of dye concentration.
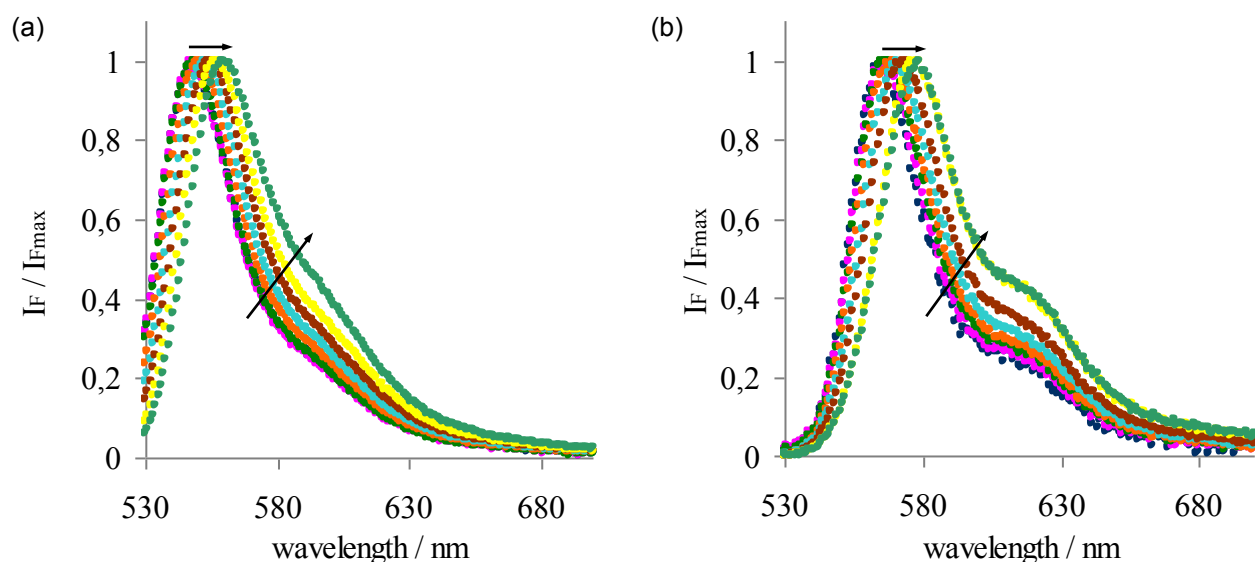
Figure S3 (a) Normalized fluorescence spectra of thin layers of EoY (all, λ_{ex} = 505 nm). Arrows indicate increasing concentrations. Data was adapted from [Rodríguez, H. B., E. San Román, P. Duarte, I. Ferreira Machado, and L. F. Vieira Ferreira (2012) Eosin Y triplet state as a probe of spatial heterogeneity in microcrystalline cellulose. *Photochem. Photobiol.* **88**, 831-839]. **(b)** Normalized fluorescence spectra of thin layers of PhB (all, λ_{ex} = 500 nm). Arrows indicate increasing concentrations.
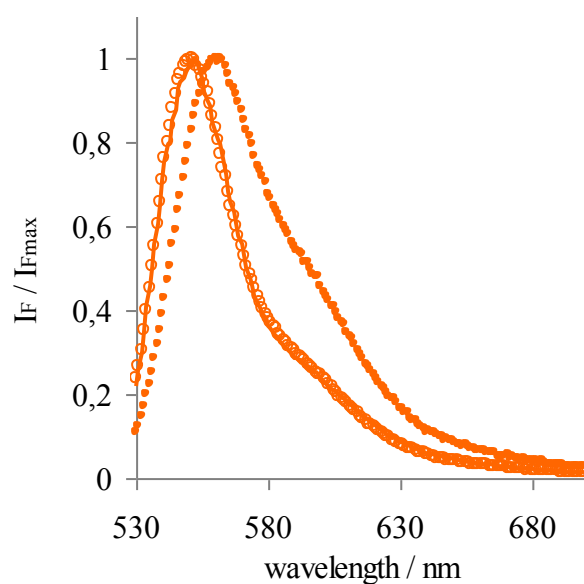

Figure S4. Normalized fluorescence spectra of thin layer (hollow circles), thick layer (filled circles) and thick layer corrected by reabsorption (full line) for EoY 0.32 μmol g^{-1} (λ_{ex} = 500 nm). Corrections are performed according to ref. [Lagorio, M. G., L. E. Dicelio, M. I. Litter, and E. San Román (1998) Modeling of fluorescence quantum yields of supported dyes. Aluminum carboxyphthalocyanine on cellulose. *J. Chem. Soc. Faraday Trans.* **94**, 419-425].

Table S2. Observed and corrected fluorescence quantum yields.

	$\varPhi_{F,obs}$ EoY	$\varPhi_F$ EoY	$\varPhi_{F,obs}$ PhB	$\varPhi_F$ PhB
1	0.670±0.017	0.733±0.014	0.601±0.017	0.751±0.030
2	0.539±0.017	0.634±0.016	0.600±0.020	0.730±0.030
3	0.412±0.018	0.506±0.013	0.599±0.021	0.717±0.028
4	0.549±0.028	0.640±0.033	0.557±0.021	0.662±0.026
5	0.404±0.025	0.495±0.032	0.311±0.014	0.395±0.019
6	0.148±0.010	0.199±0.012	0.097±0.015	0.131±0.021
7	0.089±0.015	0.121±0.020	0.101±0.015	0.132±0.019
8	0.062±0.013	0.083±0.018	0.000±0.009	0.000±0.020

Table S3. Observed and corrected triplet quantum yields obtained by LIOAS.

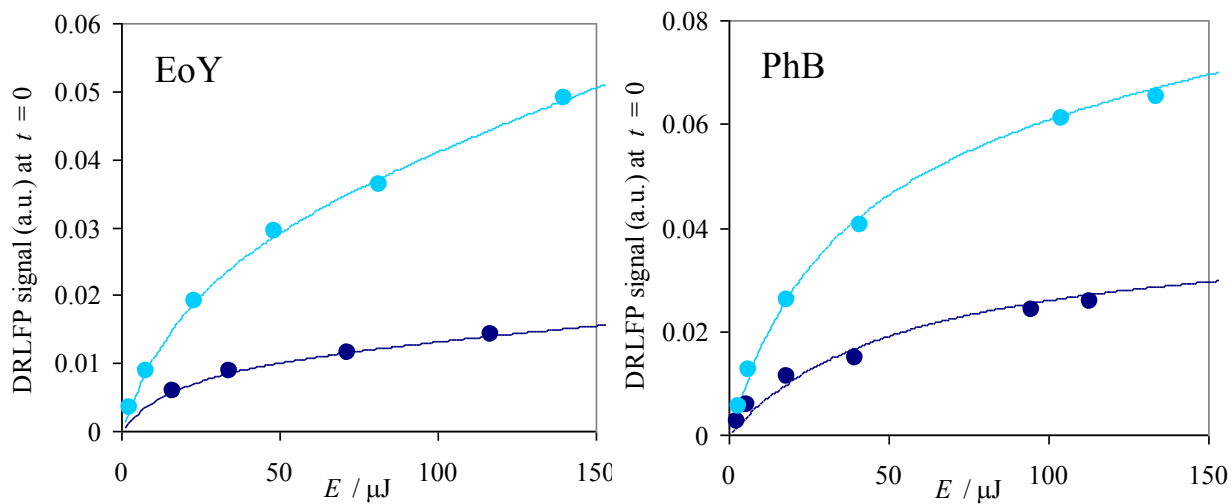|	$\varPhi_{T,obs}$ EoY	$\varPhi_T$ EoY	$\varPhi_{T,obs}$ PhB	$\varPhi_T$ PhB
1	0.27±0.05	0.24±0.04	0.33±0.06	0.26±0.05
2	0.43±0.09	0.35±0.07	0.39±0.02	0.31±0.02
3	0.50±0.12	0.43±0.10	0.36±0.04	0.27±0.03
4	0.30±0.07	0.25±0.06	0.39±0.07	0.31±0.05
5	0.20±0.06	0.18±0.05	0.48±0.13	0.42±0.12
6	0.29±0.09	0.28±0.08	0.42±0.11	0.40±0.11
7	0.13±0.09	0.13±0.09	0.24±0.10	0.24±0.10
8	0.11±0.08	0.11±0.08	0.21±0.10	0.21±0.10

Figure S5. DRLFP signals extrapolated at $t = 0$ as a function of the laser pulse energy for selected samples of EoY (left panel) and PhB (right panel). Full lines are fits to a hyperbolic equation without physical meaning.