Electronic Supplementary Material (ESI) for RSC Advances


# Elettronic Supporting Information (ESI)

## On the Formation of Aggregates in Silica – Rhodamine 6G Type II Hybrids.

Carlo M. Carbonaro*[a,b], Pier Carlo Ricci[a], Stefania Grandi[c], Marco Marceddu[b], Riccardo Corpino [a,b], Marcello Salis[a], Alberto Anedda [a,b]

[a]Department of Physics, University of Cagliari, sp n°8 km 0.700, 09042 Monserrato (Italy)
Email: cm.carbonaro@dsf.unica.it

[b]C.G.S. c/o Department of Physics, University of Cagliari, sp n°8 km 0.700, 09042 Monserrato (Italy)

[c]CNR - IENI c/o Department of Chemistry, University of Pavia, 16 v. Taramelli, 27100 Pavia (Italy)

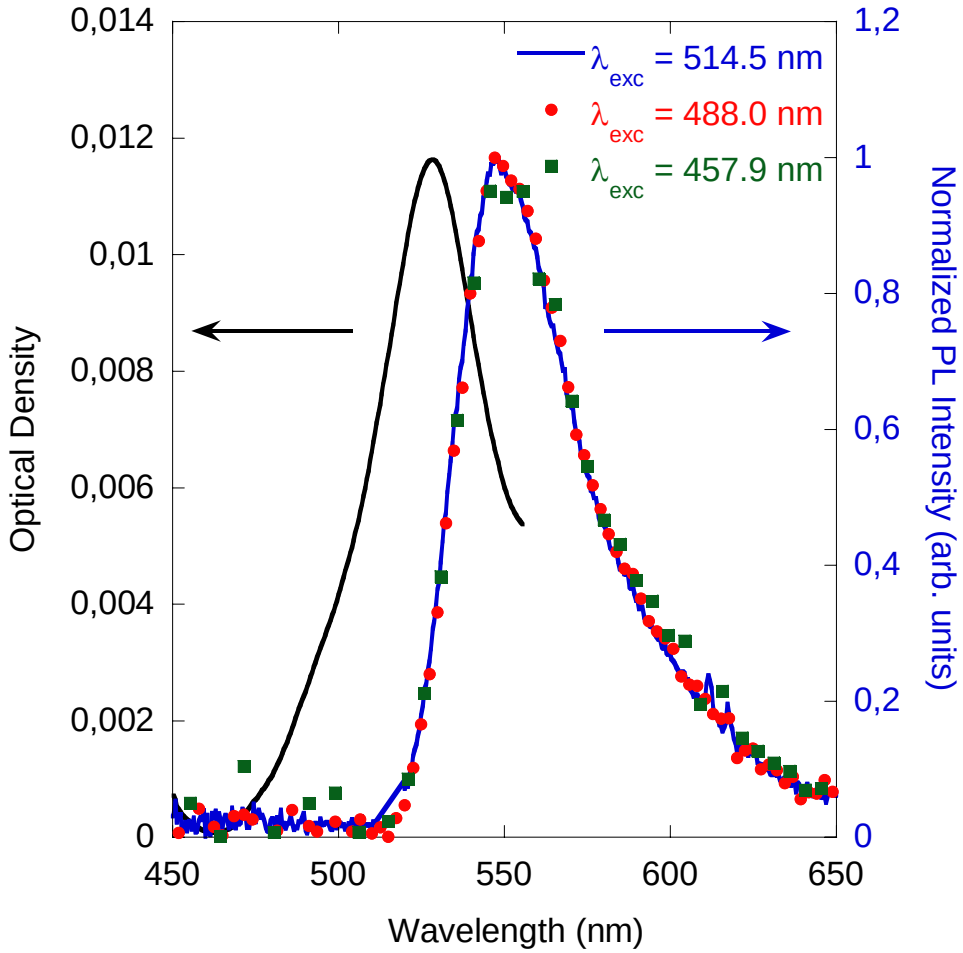


Figure S1: Optical density and steady state PL in the 450 – 650 nm, in the case of a film sample [Rh6G] = $1.6 \times 10^{-3}$ mol/l.

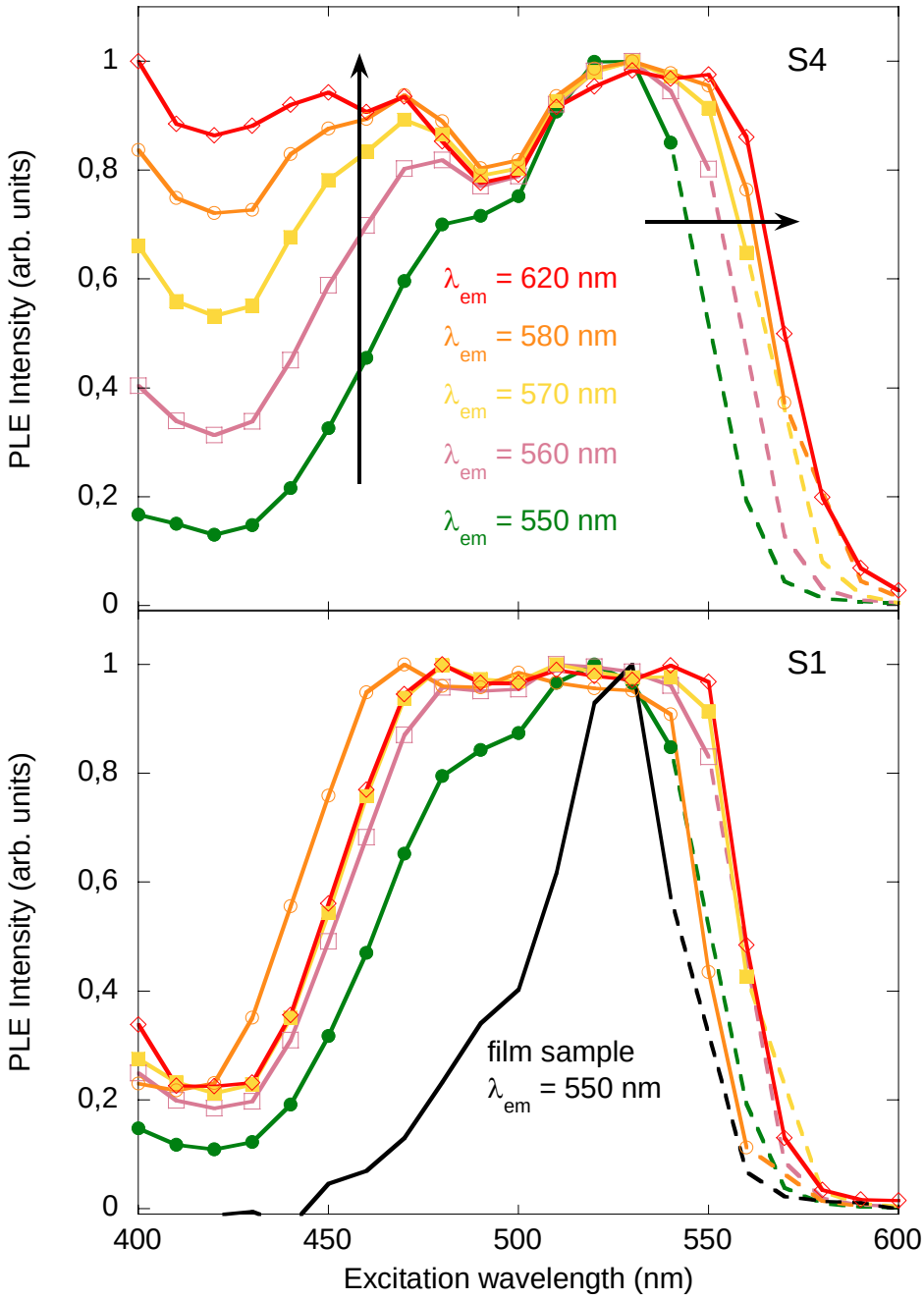


Figure S2: PLE spectra of S1 and S4 samples at different emission wavelengths. The PLE spectrum of a film sample ($\lambda_{em}$ = 550 nm) is reported for comparison.

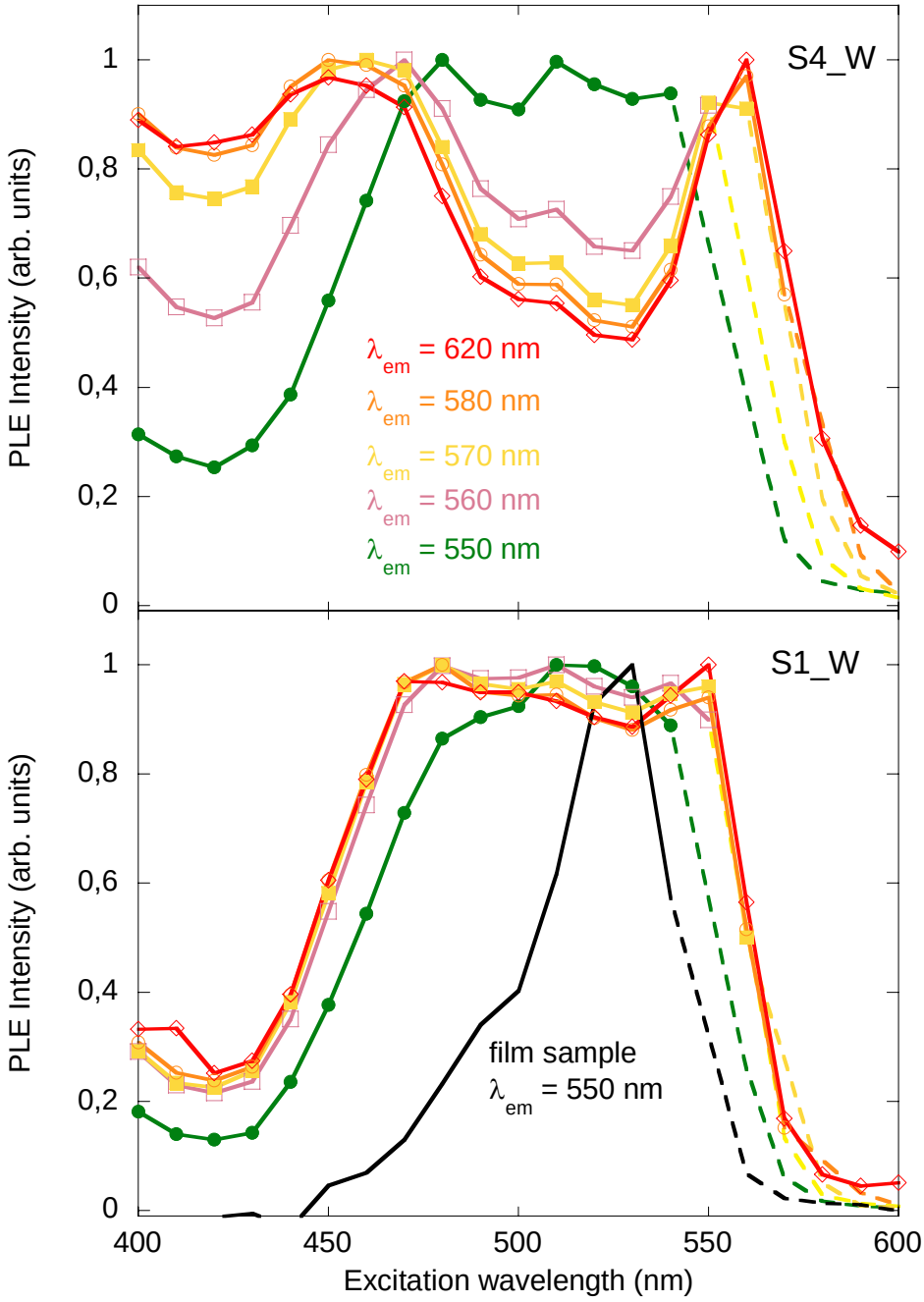


Figure S3: PLE spectra of S1 and S4 samples at different emission wavelengths after water rinsing post synthesis treatment. The PLE spectrum of a film sample ($\lambda_{em}$ = 550 nm) is reported for comparison.

**Decay time fitting procedure:**

The decay of the integrated PL intensity was fitted by a single exponential law for the 377 and 471 nm excitation cases.
On the contrary a second exponential decay was added to account for the partial overlapping of the excitation light to the emission band when exciting at 533 and 575 nm.
In the case of the 575 nm excitation, data were collected in a 90° geometry, because of the large back scattered signal recorded in the front face configuration, and by using a crossed polarizer (excitation light was vertically polarized).

**Quantum Yield estimation**

The quantum yield (QY) of the samples was estimated by recording the emission spectrum and comparing to a references of comparable absorbance (ref 35). For this reason the reference chosen is a solution of Rh6G in ethanol with the same dye concentration of the examined samples. The QY was evaluated according to the following equation:

$$QY = QY_R \frac{I}{I_R} \frac{OD_R}{OD} \frac{n^2}{n_R^2}$$

where $I$ is the integrated emission, $OD$ the optical density, and $n$ the refractive index of the samples. The subscript $R$ refers to the reference. It was assumed $n=1.33$ (Vincent *et al*., *J. Phys. Chem. C* **2007,** *111*, 8291-8298).