

3D-PHOTOPATTERNING: PHOTOCHEMISTRY OF A α -DIKETONE ANTHRACENE DERIVATIVE

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Control over the growth of organic nanostructures is a developing field of research due to increasing needs in optoelectronics and tissue engineering. A rising approach consists in triggering and controlling the self-assembly of low molecular weight gelators using external stimuli.^[1] Light and focused laser irradiation presents many advantages, such as contactless, spatial, temporal and energetic control of the stimulus.

In this study, we present a novel photoreactive precursor (dKDDOA) of 2,3-didecyloxanthracene (DDOA).^[2] DDOA is a fluorescent "super gelator" and forms fibers upon cooling a supersaturated solution to room temperature. The entanglement of fibers traps the solvent and leads to the formation of an organogel. In the case of dKDDOA, the formation of an organogel is obtained by irradiation with blue light. The irradiation of the precursor with blue light prevents the possible photobleaching of the UV-absorbing photoproduct DDOA. The gelation also occurs without change in temperature or volume of the initial solution, using concentrations of dKDDOA as low as 0.5 mM in DMSO.

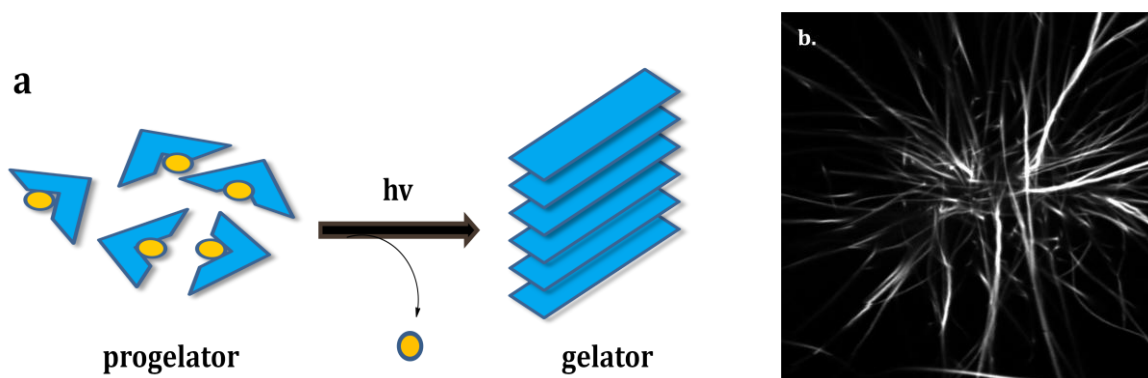


Figure 1: (a) Schematic representation of nanofiber formation upon irradiation. (b) Confocal microscopy image of the nanofibers, 80 x 80 micron.

- [1] Dolores Segarra-Maset, M.; Nebot, V.J.; Miravet, J.F.; and Escuder, B. *Chemical Society Reviews*, **2013**, 42, 7086-7094.
- [2] Giansante, C.; Schäfer, C.; Raffy, G.; Del Guerzo, A. *Journal of Physical Chemistry C*, **2012**, 116, 21706–21716