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# Supplementary information for the manuscript

## "A push-pull silafluorene fluorophore for highly efficient luminescent solar concentrators"

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**Table S1.** Fitting parameters of the lifetimes experiments of SilaFluo/PMMA films at different fluorophore content

| Conc (%) | A1 | $t_{rise}$ (ns) | A2 | $t_{decay}$ (ns) | $Chi^2$ |
|---|---|---|---|---|---|
| 0.1% | -7.08% | 1.17 ± 0.06 | 107.08% | 3.82 ± 0.09 | 1.1869 |
| 0.2% | -35.48% | 2.18 ± 0.01 | 135.48% | 4.03 ± 0.06 | 1.0649 |
| 0.4% | -7.51% | 1.06 ± 0.03 | 107.51% | 3.91 ± 0.04 | 0.9873 |
| 0.6% | -10.50% | 1,25 ± 0.02 | 110.50% | 4.18 ± 0.04 | 1.0018 |
| 0.8% | -4.50% | 0.71± 0.02 | 104.5% | 4.08 ± 0.04 | 0.9901 |
| 1.0% | -5.43% | 0.83 ± 0.02 | 105.43% | 4.37± 0.04 | 1.0193 |
| 1.2% | -5.69% | 0.84 ± 0.02 | 105.69% | 4.25 ± 0.04 | 1.0009 |
| 1.5% | -24.69% | 1,98 ± 0.02 | 124.69% | 5.03 ± 0.05 | 1,0003 |

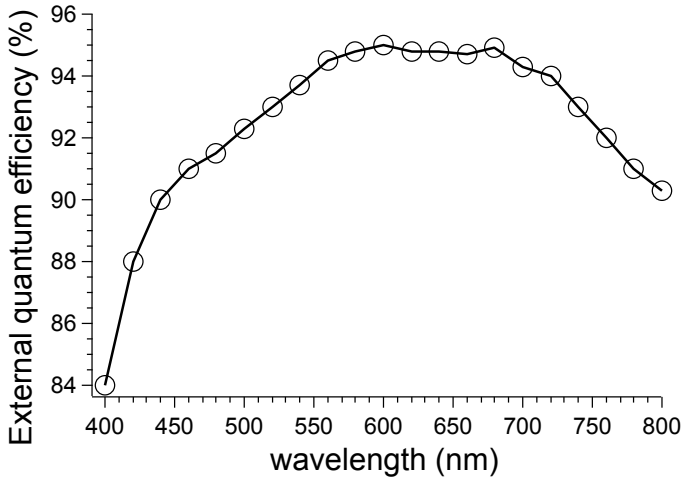


**Figure S1.** External quantum efficiency of the utilized Si-PV cell

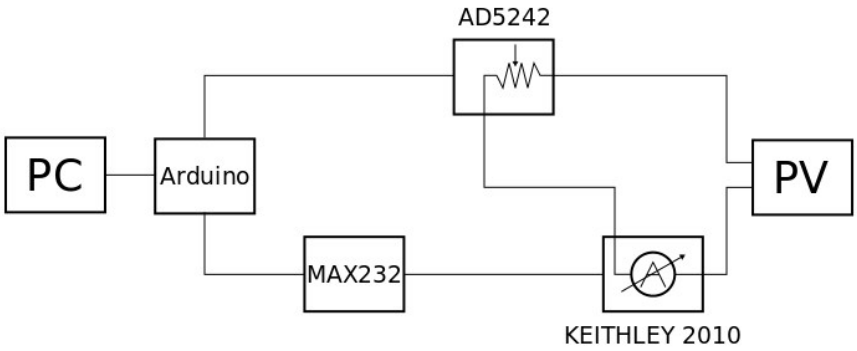


**Figure S2.** Scheme of the apparatus utilized for the photocurrent measurement

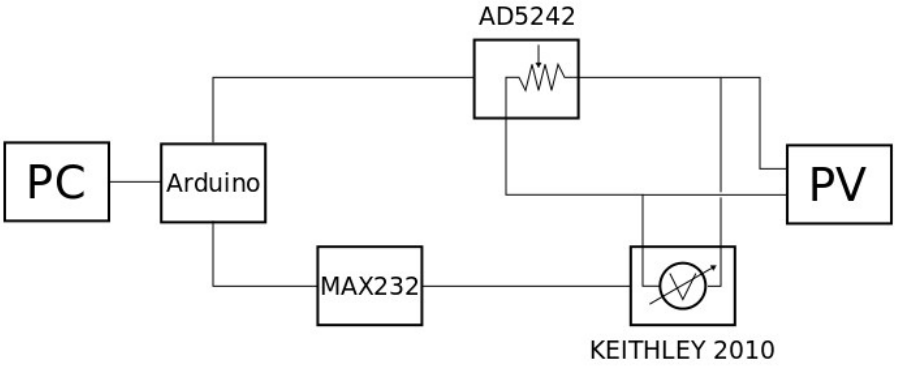


**Figure S3.** Scheme of the apparatus utilized for the voltage measurement

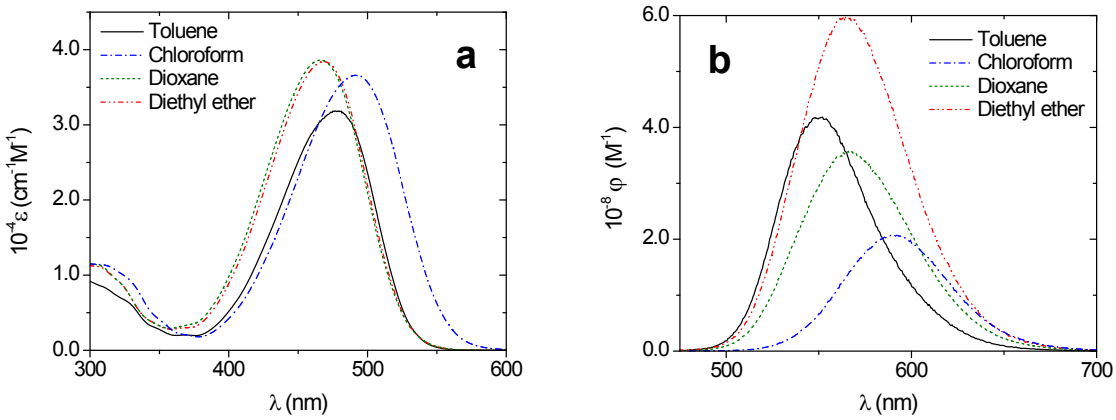


**Figure S4.** Absorbance (a) and fluorescence (b, $\lambda_{exc.} = 450$ nm) spectra of SilaFluo in the analysed solvents; spectra are normalized for the dye concentration, T = 25.0 °C

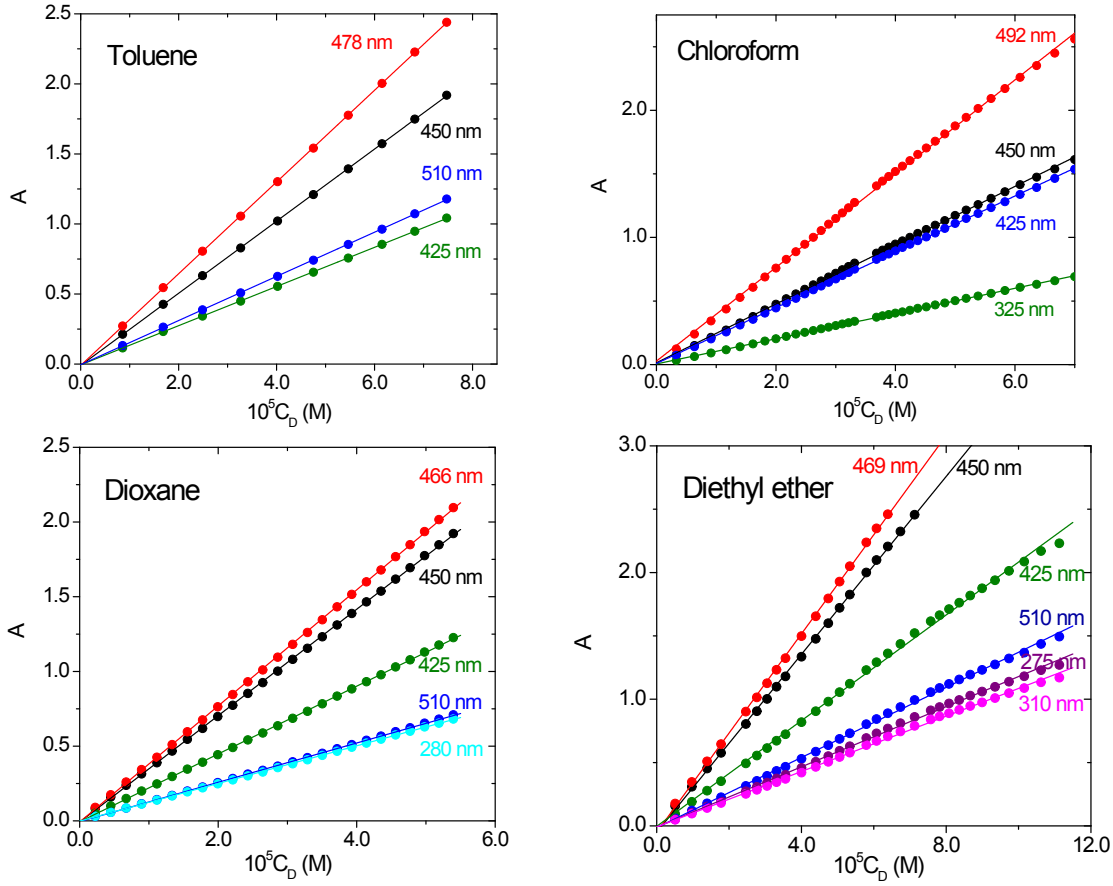


**Figure S5.** Absorbance/concentration plots for SilaFluo in the analysed solvents; T = 25.0 °C.

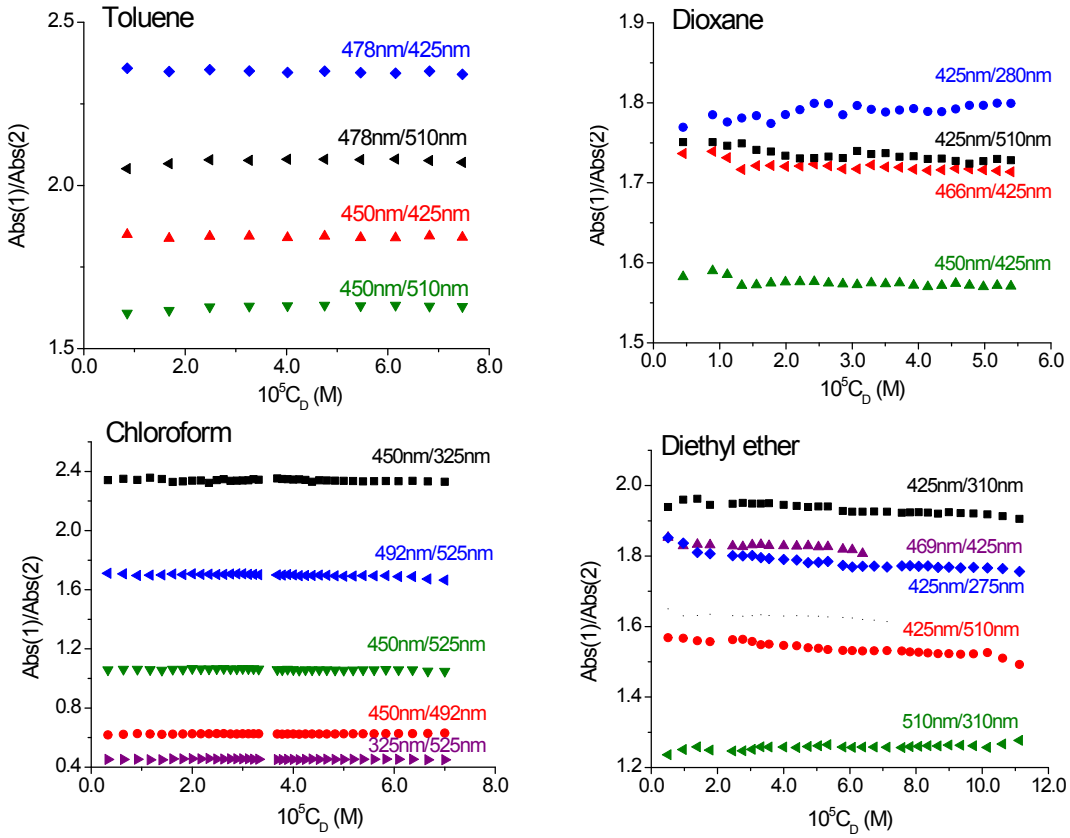


**Figure S6.** Absorbance ratio plots for SilaFluo in the analysed solvents; T = 25.0 °C.

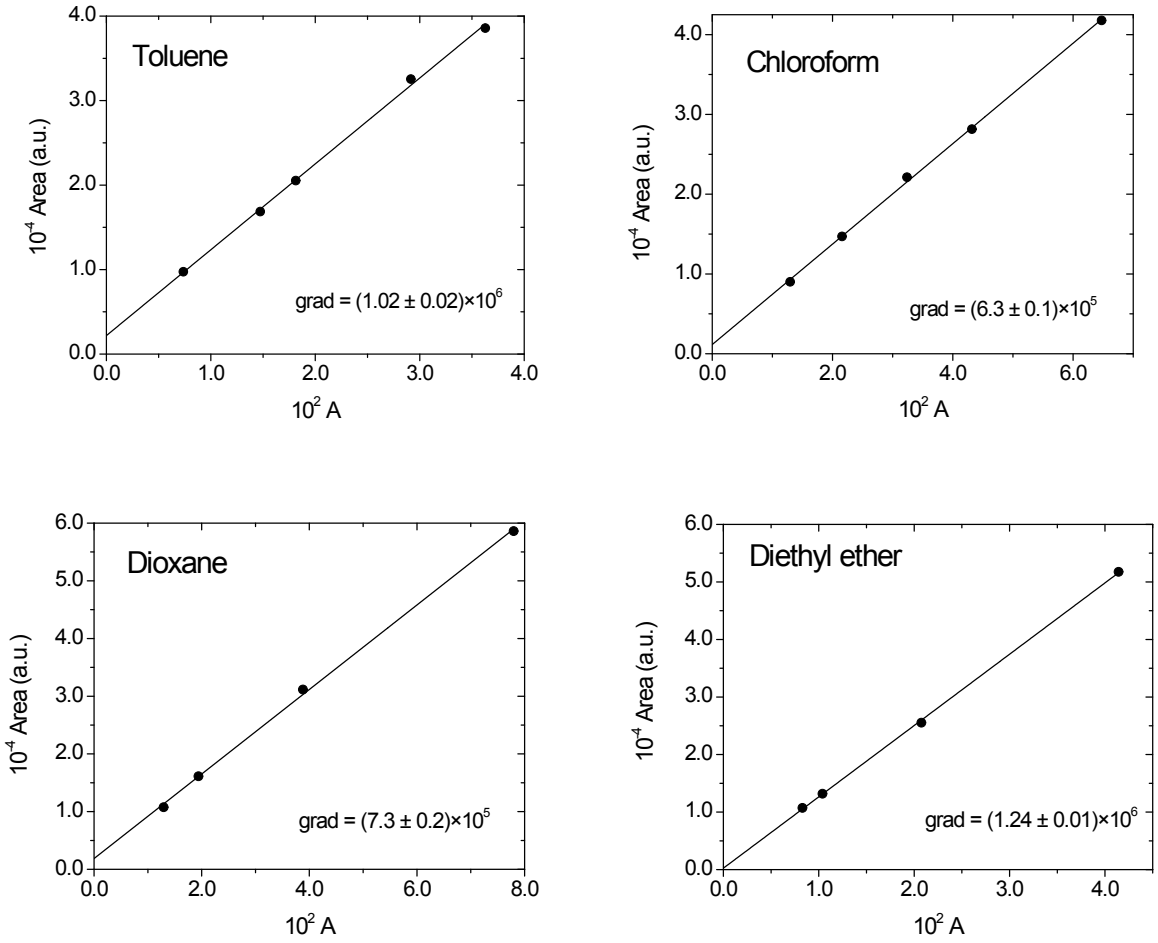


**Figure S7.** Fluorescence emission band area/absorbance plots for SilaFluo in the analysed solvents; λex = 450 nm, T = 25.0 °C.

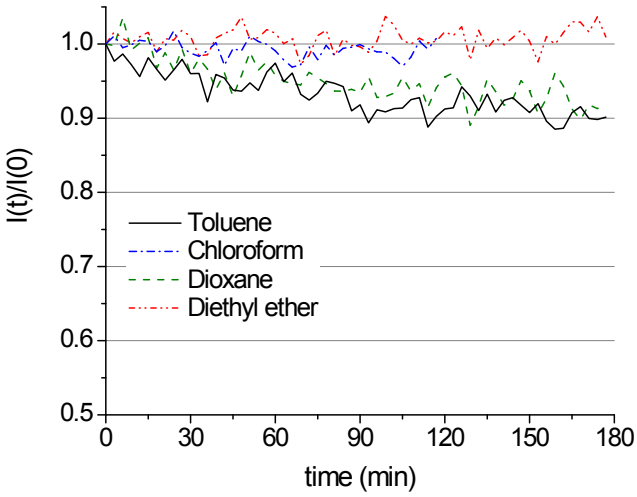


**Figure S8.** Fluorescence emission in time for SilaFluo in the analysed solvents; excitation equal to maximum absorption, emission equal to maximum emission, I is fluorescence intensity a time (t), I(0) is I(t) at t = 0, T = 25°C.

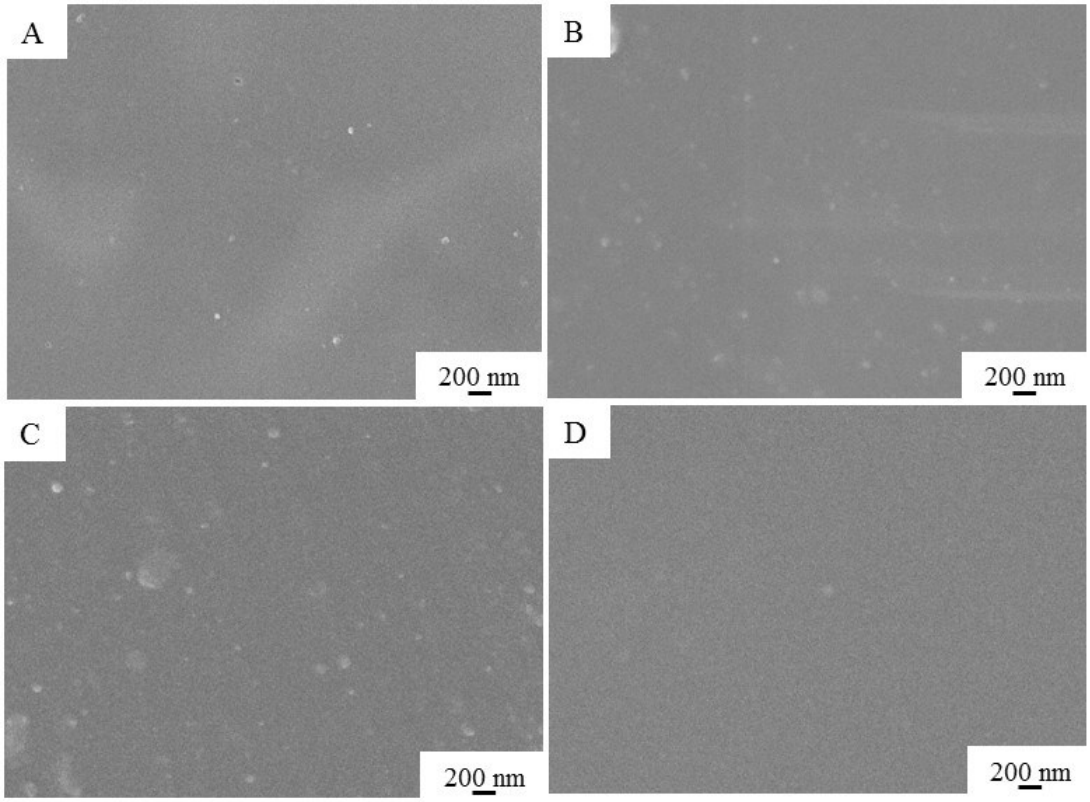


**Figure S9.** SEM images of PMMA (A) and PMMA/Silafluo films at different loading: 0.10% (B), 0.60% (C) and 1.50% (D). Acceleration voltage 5 keV.

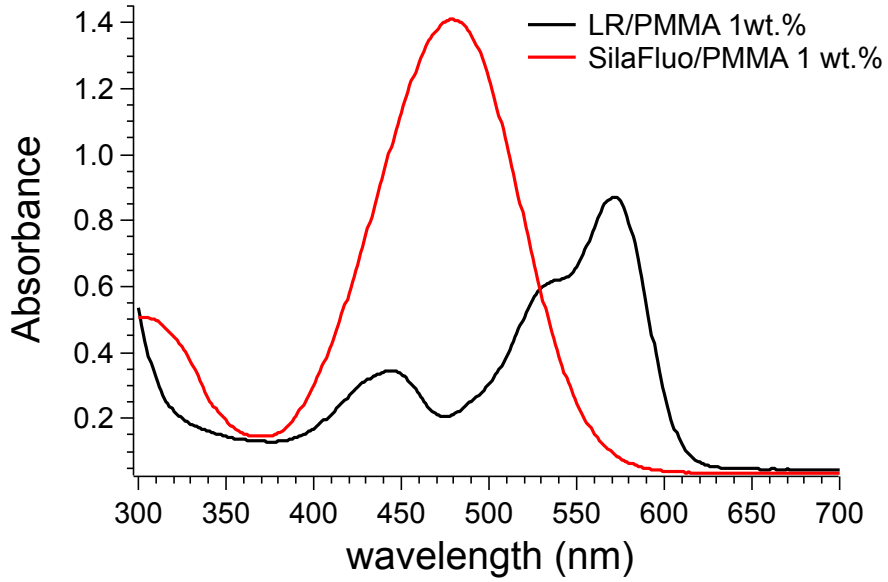


**Figure 10.** UV-vis absorption spectra of SilaFluo/PMMA and LR/PMMA films with the same fluorophore content (1 wt.%) and thickness ($25 \pm 5$ μm)

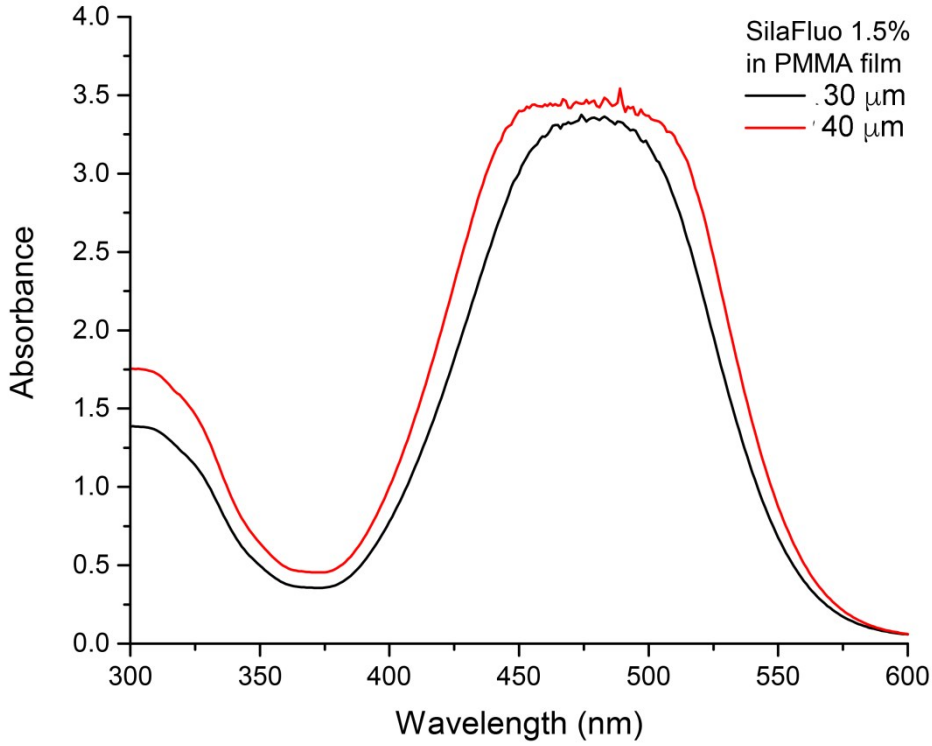


**Figure S11.** UV-vis absorption spectra of 1.5 wt.% SilaFluo/PMMA films with thickness of 30 ± 5 and 40 ± 5µm.

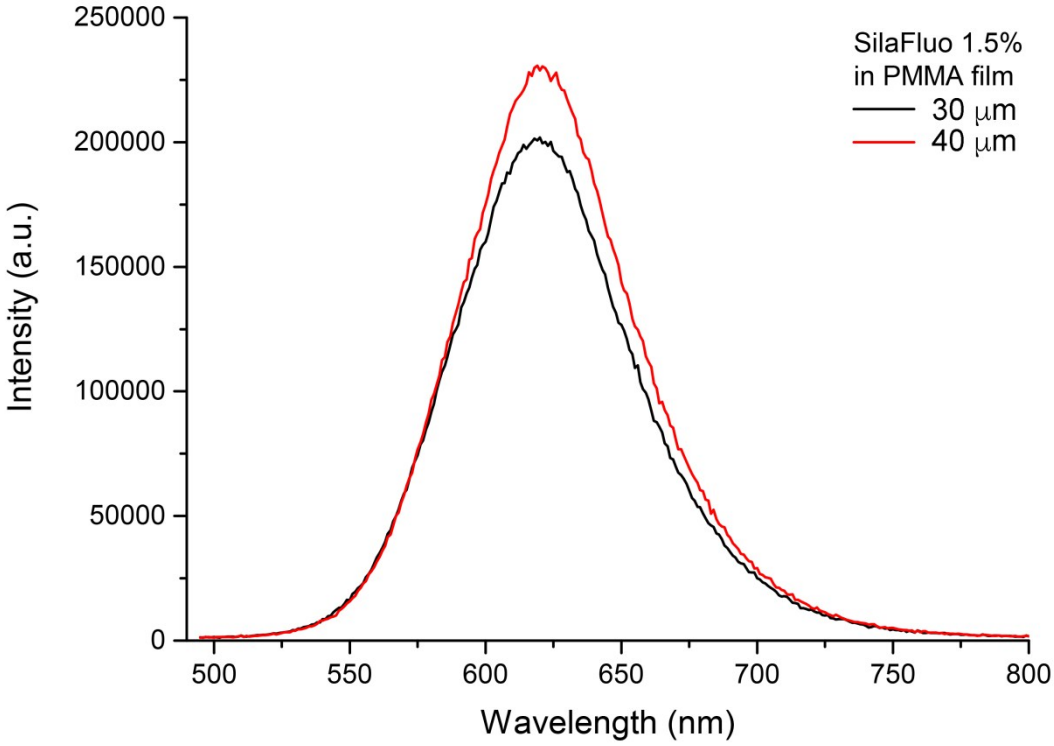


**Figure S12.** Emission spectra ($\lambda_{exc.} = 450$ nm) of 1.5 wt.% SilaFluo/PMMA films with thickness of 30 ± 5 and 40 ± 5µm.

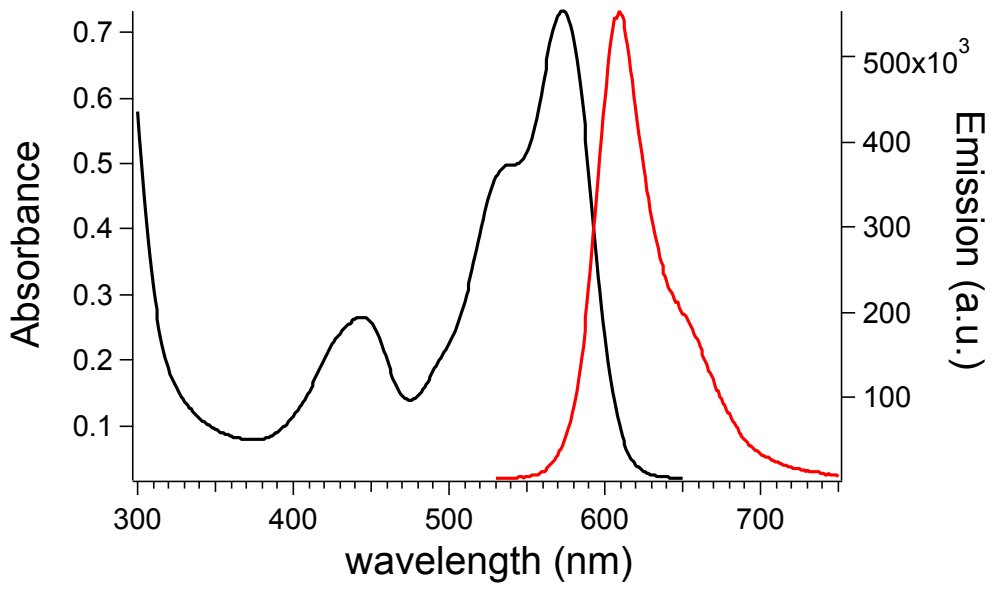


**Figure S13**. UV-vis absorption and emission spectra ($\lambda_{exc.} = 450$ nm) of LR/PMMA film containing the 1 wt.% of LR

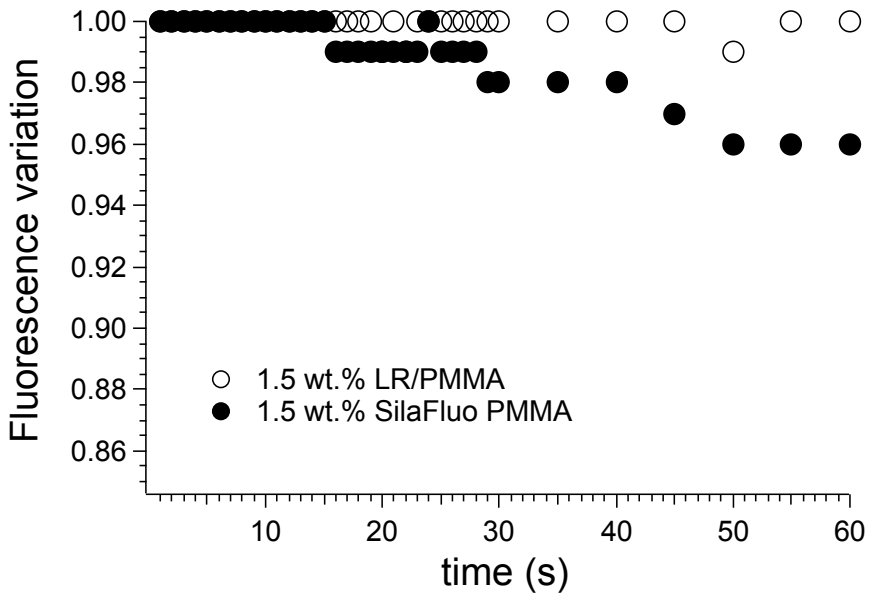


**Figure S14.** Fluorescence intensity variation as a function of the continuous irradiation at 570 nm and 480 nm for 1.5 wt.% LR/PMMA and SilaFluo/PMMA films, respectively