Supporting information

Gold nanorods embedded in polymeric film for killing bacteria by generating reactive oxygen species with light

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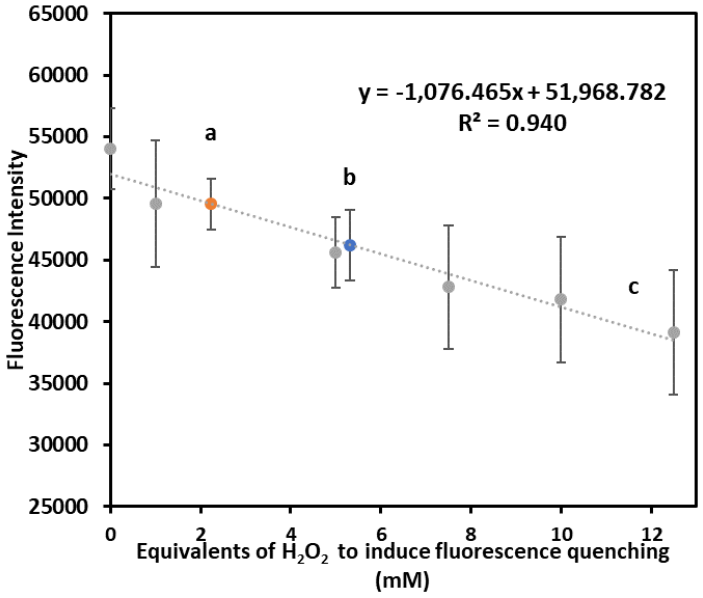

Figure S1. Fluorescence intensity measurement of a solution 50 µg/mL of sodium fluorescein in alkaline condition after 1 h of exposure to light (11.7 klux) on a) CV modified polymer and b) PU/citNa-AuNRs/CV, c) Calibration curve of fluorescence intensity of fluorescein solution in the experimental condition after adding aliquots of H_2O_2 (1, 5, 7.5, 10, 12.5 mM).

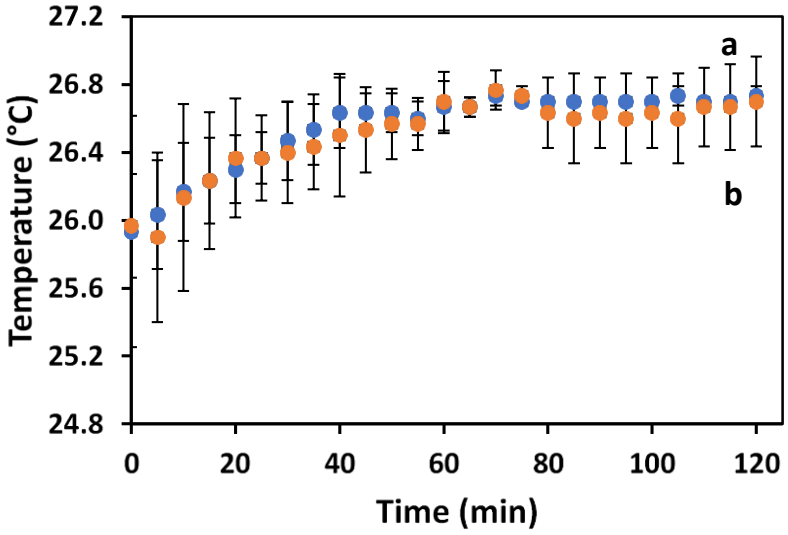

Figure S2. Measurement of the temperature of the polymeric film in relation with the time of light exposure (11.7 klux); a) PU film b) PU/citNa-AuNRs/CV.

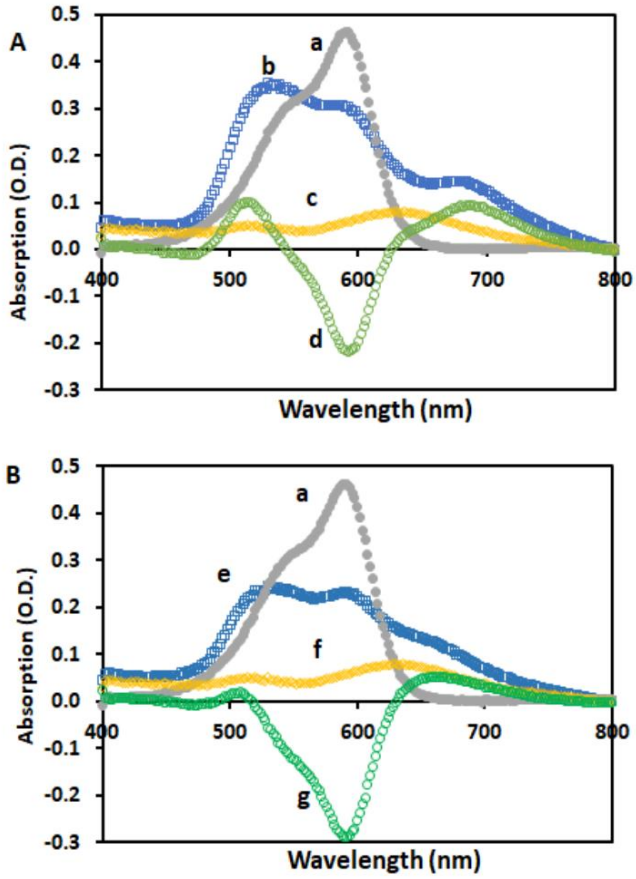

Figure S3. UV-Visible absorption spectra of CV 10 µM in presence of 20% of nanoparticles solution (≈ 30 µM) A) citNa-AuNRs and B) thiol-PEG-AuNRs. a) Spectra of CV 10 µM, b) citNa coated AuNRs in presence of 10 µM of CV, c) spectra of ≈30 µM of citNa-AuNRs, d) subtraction curve [b-(a+c)] difference of absorption between the mixed solution and the sum of the components; e) thiol-PEG coated AuNRs in presence of 10 µM, f) spectra of ≈30 µM of thiol-PEG-

AuNRs solution, g) subtraction curve [e-(a+f)] difference of absorption between the mixed solution and the sum of the components.

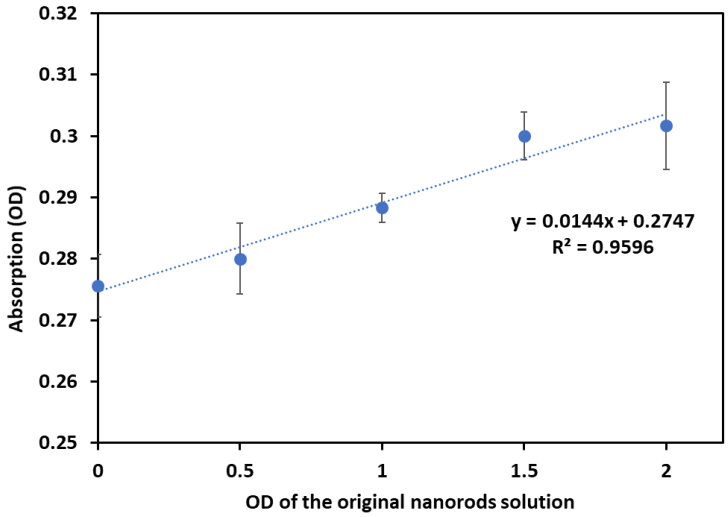

Figure S4. Intensity of the LSPR peak (648 nm) of the AuNRs embedded PU film as a function of the concentration of the AuNRs in the swell solution.

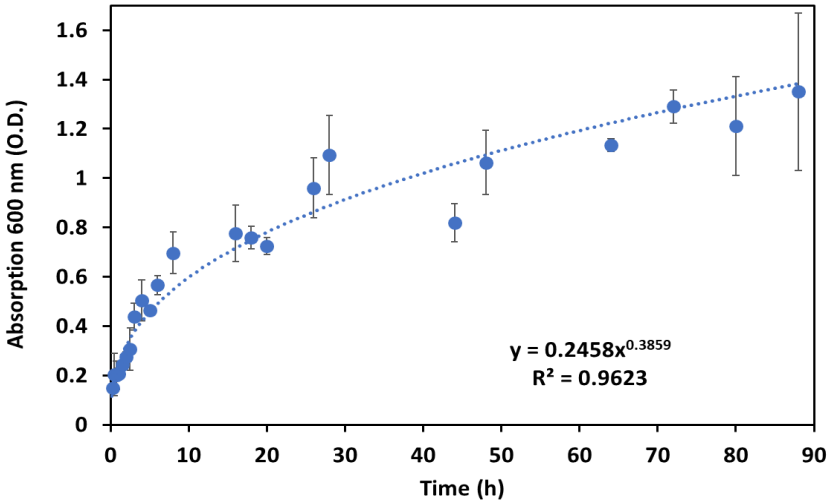

Figure S5. Absorption at 600 nm of polymeric tiles incubated with 1 mM of CV after different times of incubation (15 min to 90 h)

The diffusion process was quicker and more reliable for the first 48 h of the process. Losing consistency while it came close to the limit of the dye concentration in the film. The points have been fitted to help the visualization of the dye diffusion in the polymer. 48 h of incubation have been chosen because it was in the quasi-plateau regime of the diffusion curve while be still reproducible.