

**Mechanistic insight of the photodynamic effect mediated by porphyrin-fullerene C<sub>60</sub> dyads in solution and *Staphylococcus aureus* cells**

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**Electronic supplementary information (ESI)**

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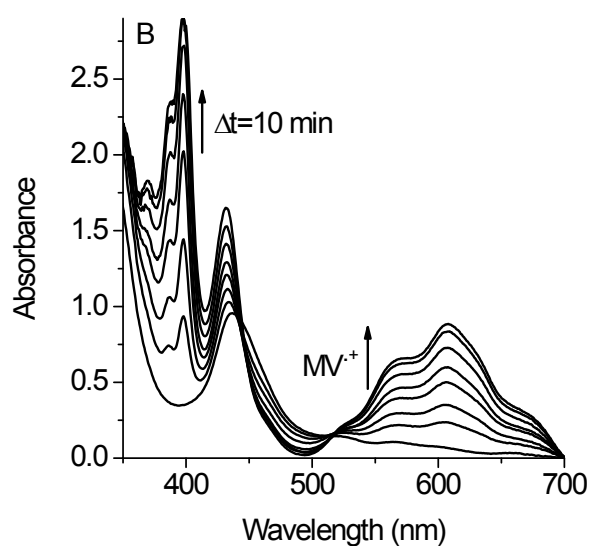
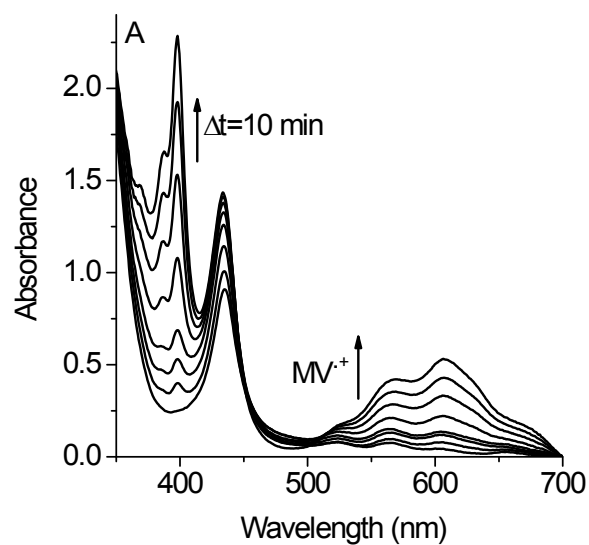
**Figure S4.** Fluorescence intensity of Trp.

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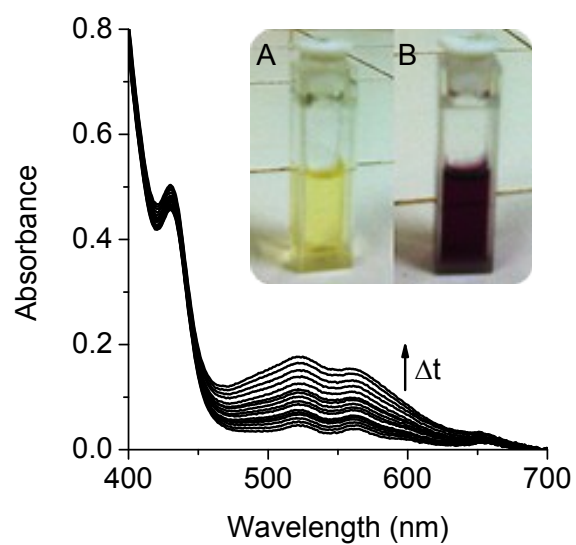
**Video S1.** Back electron transfer process in the reduction of MV<sup>2+</sup> catalyzed by oxygen, according Figure S1B.

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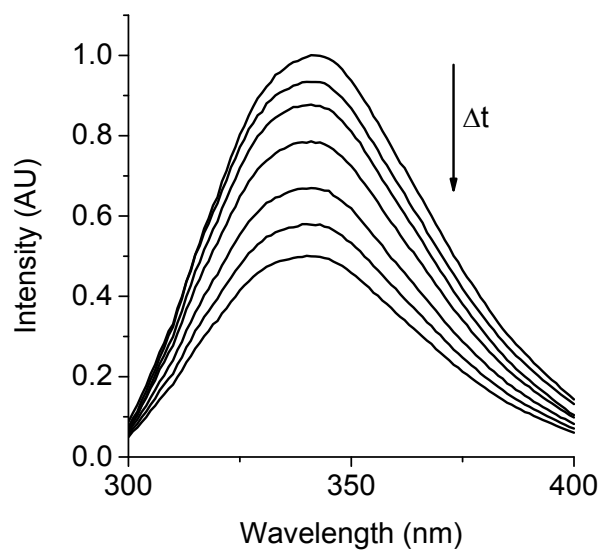
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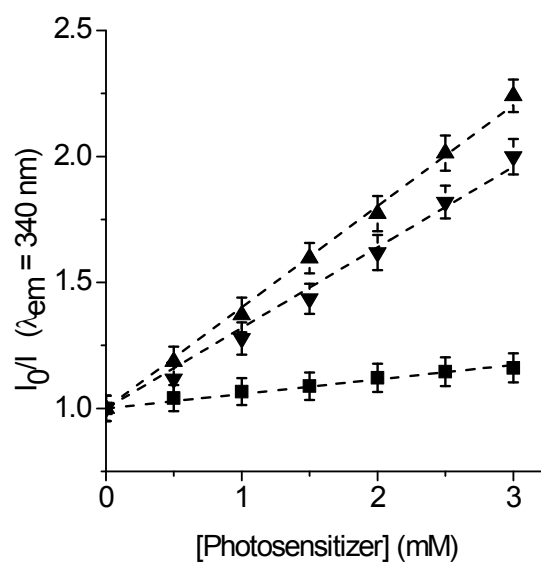
**Figure S1.** Spectral change observed in the steady-state photolysis of MV<sup>2+</sup> (0.8 mM) sensitized by (A) TCP-C<sub>60</sub> (3.0  $\mu$ M) and (B) TCP-C<sub>60</sub><sup>4+</sup> (3.0  $\mu$ M) containing TMN (0.4 mM) after 10 min irradiation periods with visible light in DMF/5% water under an argon atmosphere,  $\lambda_{\text{irr}} = 433$  nm.



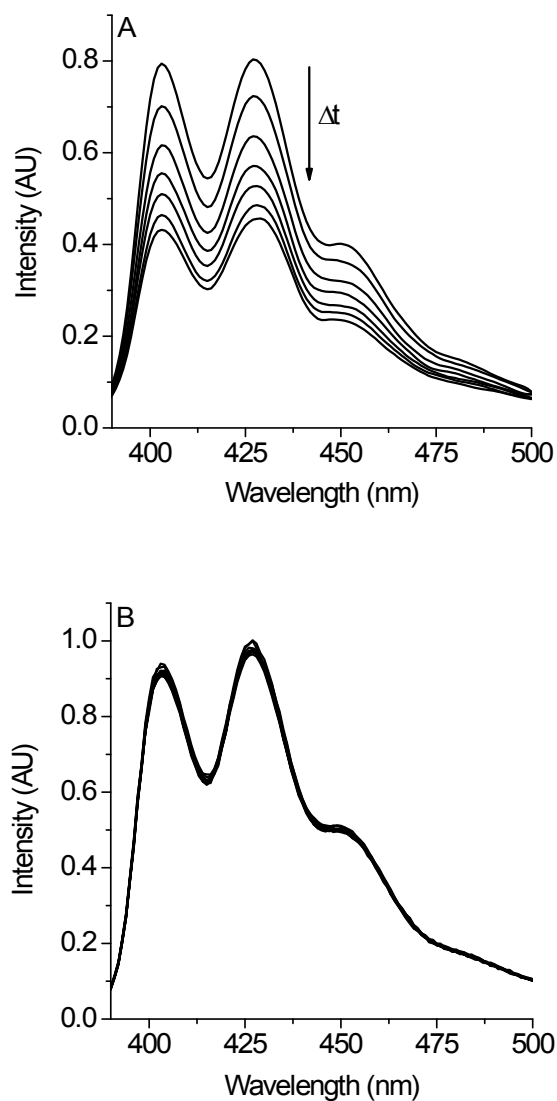
**Figure S2.** Absorption spectra changes of NBT photoreduction mediated by TCP-C<sub>60</sub> after different irradiation times. Samples contain NBT (0.2 mM), NADH (0.5 mM) and TCP-C<sub>60</sub> (1.2 μM) in DMF/10% water irradiated with visible light,  $\lambda_{\text{irr}} = 428 \text{ nm}$ . Inset: cuvette before (A) and after (B) 18 min irradiation



**Figure S3.** Fluorescence emission spectra changes of Trp photooxidation sensitized by TCP-C<sub>60</sub> after different irradiation times ( $\Delta t = 240$  s) in DMF;  $\lambda_{\text{exc}} = 290$  nm,  $\lambda_{\text{irr}} = 428$  nm.



**Figure S4.** Fluorescence intensity of Trp (5 mM,  $\lambda_{exc} = 290$  nm) in the presence of different concentration of TCP-C<sub>60</sub> (□), TCP-C<sub>60</sub><sup>4+</sup> (□) and TCP (■) in DMF.



**Figure S5.** Fluorescence emission spectra changes of DMA photooxidation after different irradiation times ( $\Delta t = 10$  s) in *S. aureus* cells ( $\sim 10^6$  CFU/mL) incubated with  $10 \mu\text{M}$  DMA for 30 min followed by a washing step and treated with  $1 \mu\text{M}$  (A) TCP-C<sub>60</sub> for 30 min at  $37^\circ\text{C}$  in dark and (B) control without TCP-C<sub>60</sub>.  $\lambda_{\text{irr}} = 455\text{-}800$  nm.