

## *Supporting Information*

### In-situ dressing based on a D- $\pi$ -A structured aggregation-induced emission photosensitizer for healing infected wounds

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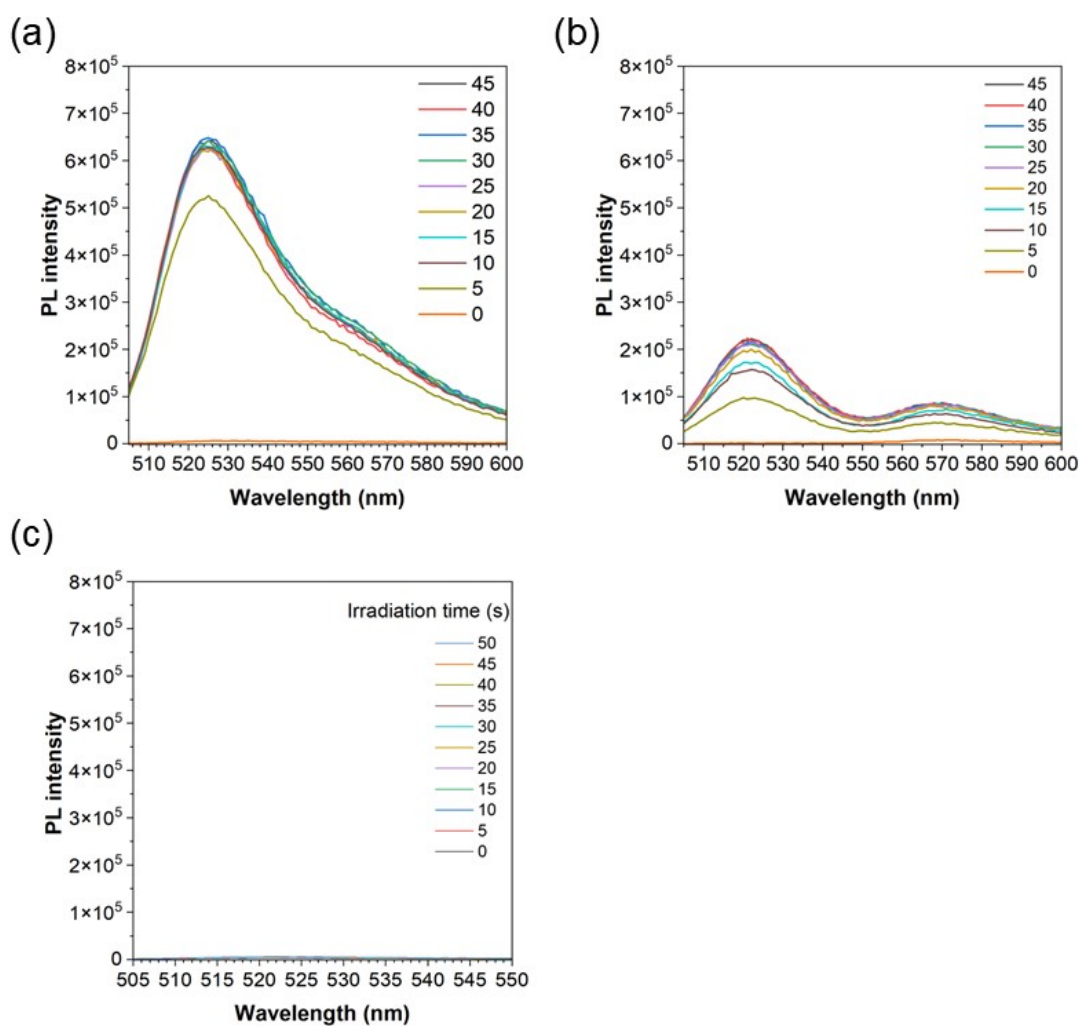
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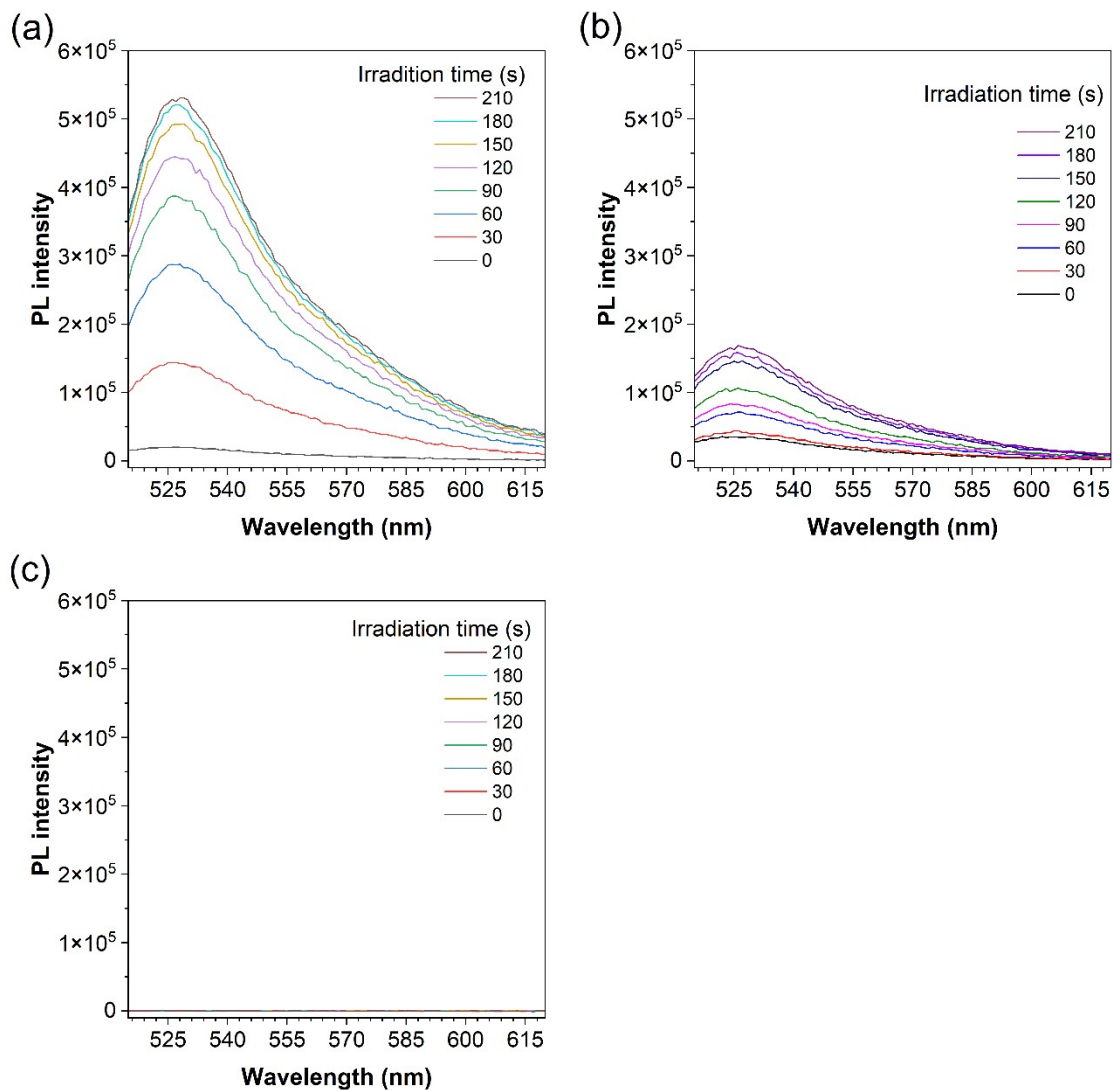
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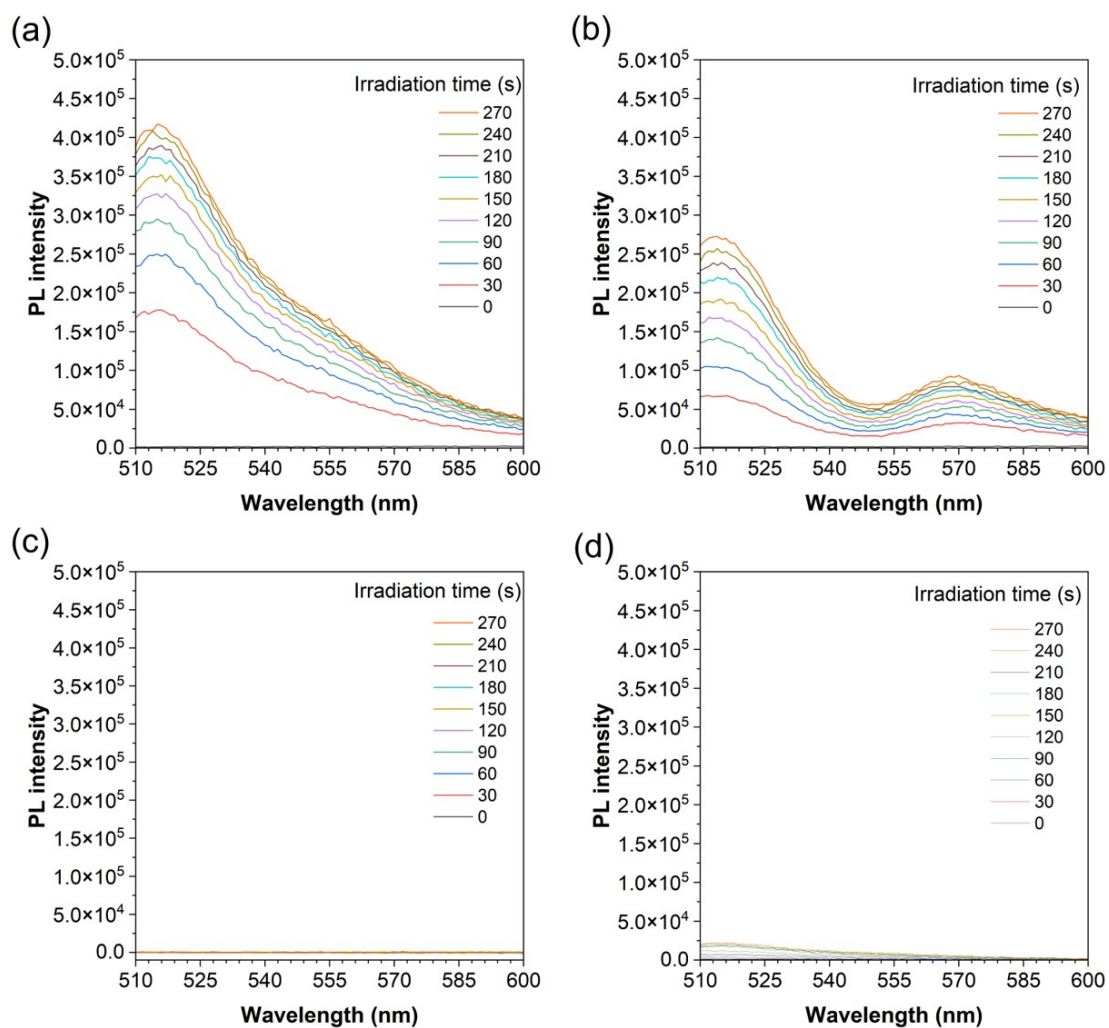
E-mail: zhaoenngui@hit.edu.cn



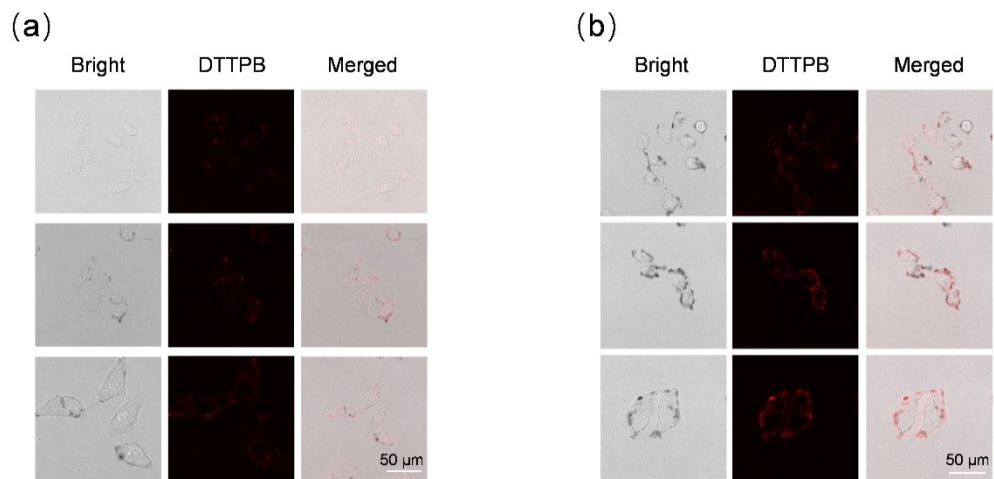
**Fig. S1** (a) Time-dependent fluorescence spectra of both DCFH (40  $\mu\text{M}$ ) and DTTPB (10  $\mu\text{M}$ ) under white-light irradiation. Power of irradiation light: 36  $\text{mW}/\text{cm}^2$  (b) time-dependent fluorescence spectra of both DCFH (40  $\mu\text{M}$ ) and RB (10  $\mu\text{M}$ ) under white-light irradiation. Power of irradiation light: 36  $\text{mW}/\text{cm}^2$ . (c) Time-dependent fluorescence spectra of DCFH (40  $\mu\text{M}$ ) in PBS under white-light irradiation.



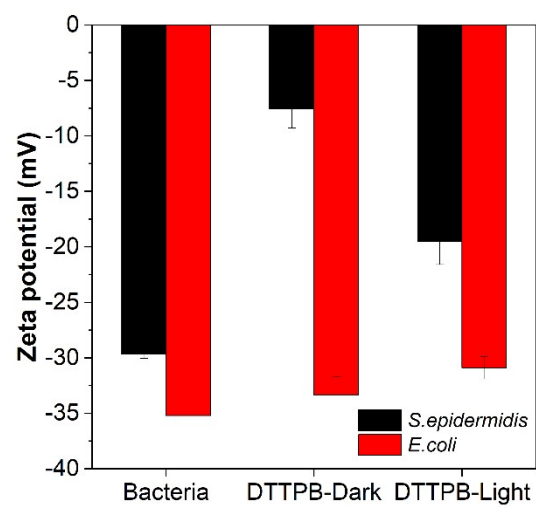
**Fig. S2** (a) Time-dependent fluorescence spectra of DTTPB ( $2 \mu\text{M}$ ) and DHR123 ( $5 \mu\text{M}$ ). (b) Time-dependent fluorescence spectra of DTTPB ( $2 \mu\text{M}$ ). (c) Time-dependent fluorescence spectra of DHR123 ( $5 \mu\text{M}$ ). Power of irradiation light:  $36 \text{ mW/cm}^2$ .



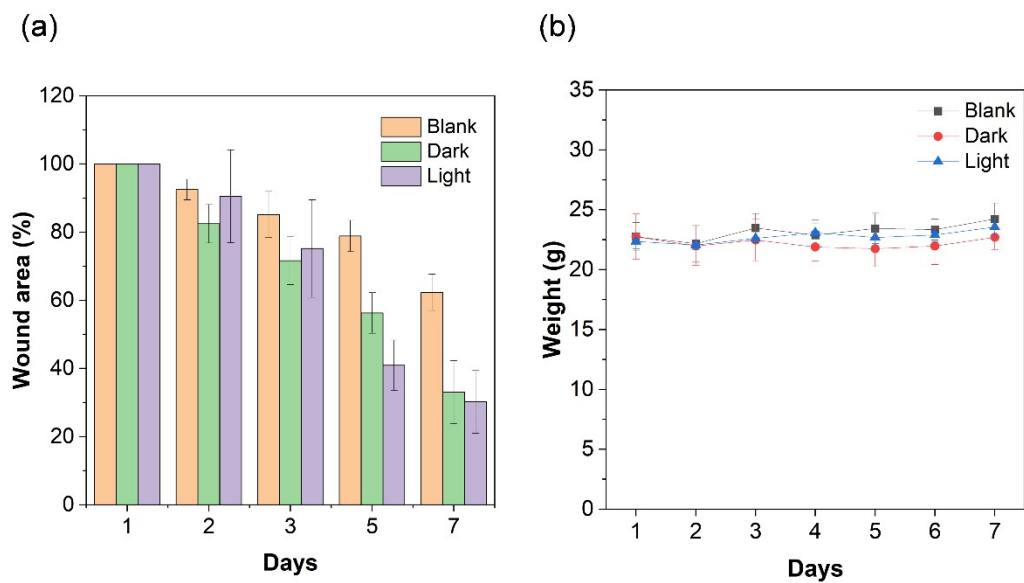
**Fig. S3** (a) Time-dependent fluorescence intensity of RB (10  $\mu\text{M}$ ) and HPF (5  $\mu\text{M}$ ). (b) Time-dependent fluorescence intensity of DTTPB (10  $\mu\text{M}$ ) and HPF (5  $\mu\text{M}$ ). (c) Time-dependent fluorescence spectra of DTTPB (10  $\mu\text{M}$ ). (d) Time-dependent fluorescence spectra of HPF (10  $\mu\text{M}$ ). Power of irradiation light: 36  $\text{mW}/\text{cm}^2$ .



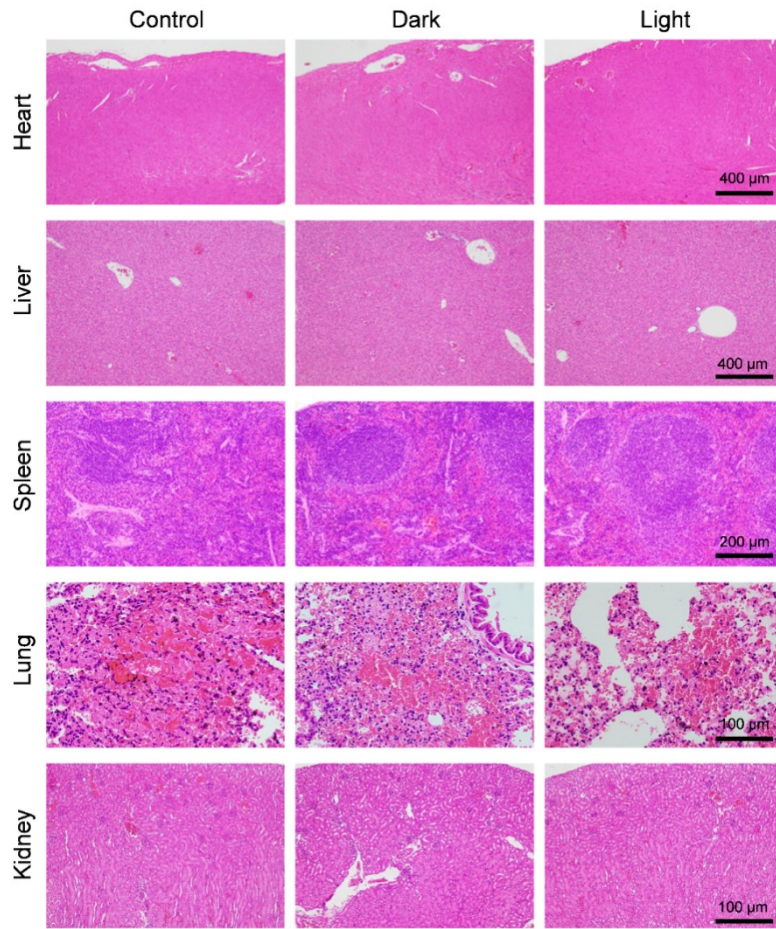
**Fig. S4** Imaging of HeLa cells stained with DTPPB (red) at (a) 5  $\mu$ M and (b) 10  $\mu$ M, respectively, for 1 h.



**Fig. S5** Zeta potentials of *S. epidermidis* and *E. coli* in H<sub>2</sub>O pretreated with and without DTPB (5  $\mu$ M) and light irradiation (36 mW/cm<sup>2</sup>) for 10 min.

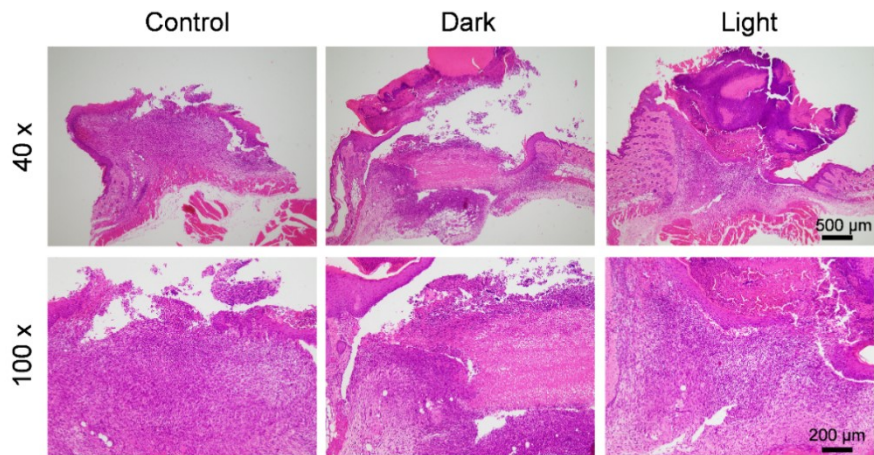


**Fig. S6** (a) The corresponding change in wound area calculated from wound images. The error bars ( $n = 3$ ) represent means  $\pm$  SD. (b) Body weight of BALB/c mice with various treatments. The error bars ( $n = 3$ ) represent means  $\pm$  SD.

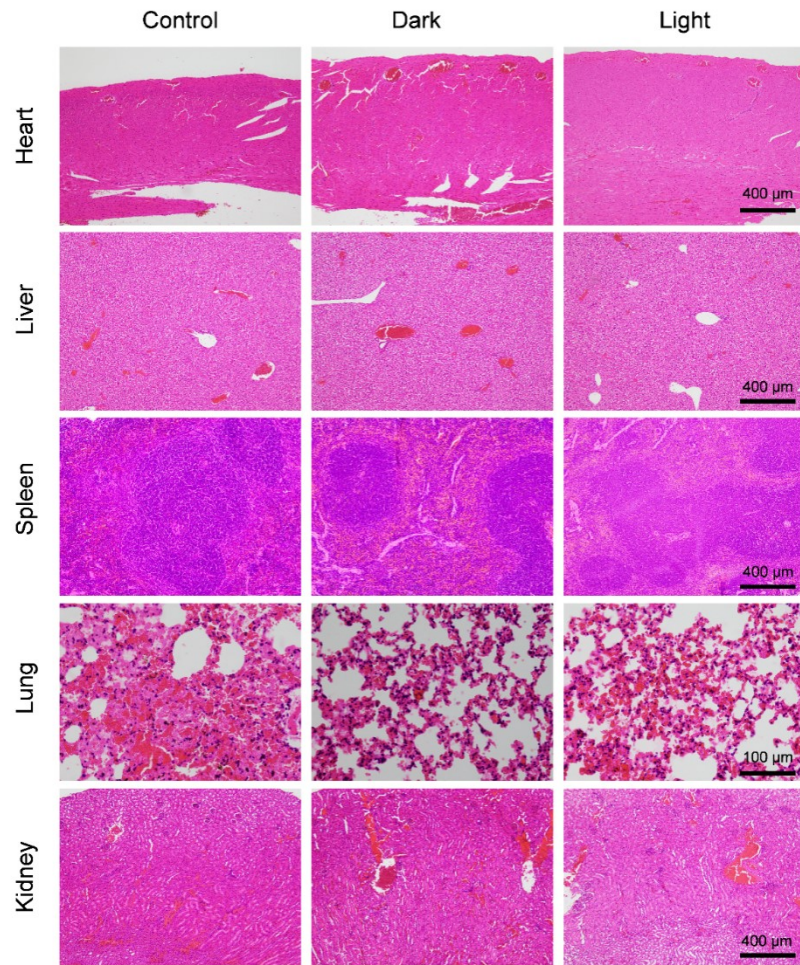


**Fig. S7** H&E staining of different tissues (heart, liver, lung, kidney, and spleen) from bacterial-infected mice in the wound healing assay treated with or without DTPB-mediated PDT.





**Fig. S8** (a) H&E staining of *E. coli* and *S. epidermidis*-infected wounds in the presence of PBS, DTTPB@gel without light irradiation (Dark), or DTTPB@gel with white-light irradiation (Light).



**Fig. S9** H&E staining of different tissues (heart, liver, lung, kidney, and spleen) from bacterial infected mice in the wound healing assay treated with or without DTTPB@gel-mediated PDT.