Supporting Information for

Nanoporous photosensitizing hydrogel based on chitosan cross-linked by zinc phthalocyanine: An injectable and pH-stimuli responsive system for effective cancer therapy

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1) The IR spectra of FPPht and TA-ZnPc

![Fig. S1. FT-IR spectra of FPPht and TA-ZnPc](image)

2) The MALDI-TOF mass spectrum of the TA-ZnPc

![Fig. S2. MALDI-TOF mass spectrum of TA-ZnPc](image)
3) FT-IR analysis of TA-ZnPc, pure CS and TA-ZnPc/CS hydrogel

![FT-IR spectra of TA-ZnPc, pristine CS, TA-ZnPc/CS hydrogel](image)

Fig. S3. FT-IR spectra of TA-ZnPc, pristine CS, TA-ZnPc/CS hydrogel

4) $^1$H NMR spectra of FPPht and TA-ZnPc

![$^1$H NMR spectra of FPPht and TA-ZnPc at room temperature in DMSO-d$_6$ and TA-ZnPc/CS hydrogel in D$_2$O.](image)

Fig. S4. $^1$H NMR spectra of FPPht and TA-ZnPc at room temperature in DMSO-d$_6$ and TA-ZnPc/CS hydrogel in D$_2$O.

5) Macroscopic and microscopic self-healing behavior of the TA-ZnPc/CS hydrogel

![Macroscopic and microscopic self-healing property of TA-ZnPc/CS hydrogel at neutral pH.](image)

Fig. S5. (A) Macroscopic and (B) Microscopic self-healing property of TA-ZnPc/CS hydrogel at neutral pH.
6) Absorption spectra of TA-ZnPc/CS hydrogel in response to the decreasing pH

![Absorption spectra of TA-ZnPc/CS hydrogel in response to the decreasing pH](image1)

**Fig. S6.** Absorption spectra of TA-ZnPc/CS hydrogel in response to the decreasing pH in H₂O. pH 7.4 (blue), pH 6.8 (green) and pH 5.0 (red) (c = 10 μM).

7) The linear plot of absorbance of DPBF (c = 100 μM) in the presence of TA-ZnPc conjugated chitosan

![Linear plot of absorbance of DPBF in the presence of TA-ZnPc conjugated chitosan](image2)

**Fig. S7.** The linear plot of absorbance of DPBF (c = 100 μM) in the presence of TA-ZnPc conjugated chitosan (c = 20 μM) at 417 nm against irradiation time (660 nm) at pH 7.4 (A) and (B) pH 5.0.
8) The standard concentration–absorbency curve of TA-ZnPc at different pH

![Image](image.png)

*Fig. S8.* Standard curves of TA-ZnPc in (A); pH 7.4; (B) pH 6.8 and (C) pH 5.0.

9) The singlet oxygen quantum yields of the TA-ZnPc/CS, TA-NiPc and TA-CuPc/CS hydrogels

*Table S1.* The singlet oxygen quantum yield for synthesized hydrogels in DMF at pH 5.0.

<table>
<thead>
<tr>
<th>No</th>
<th>Compound</th>
<th>Singlet oxygen quantum yield ($\Phi_\Delta$)</th>
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<tr>
<td>1</td>
<td>TA-ZnPc/CS</td>
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</tr>
<tr>
<td>2</td>
<td>TA-CuPc/CS</td>
<td>0.16</td>
</tr>
<tr>
<td>3</td>
<td>TA-NiPc/CS</td>
<td>0.09</td>
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