

Electronic Supporting Information (ESI)

**Water-dispersible glycosylated poly(2,5'-thienylene)porphyrin-based
nanoparticles for antibacterial photodynamic therapy**

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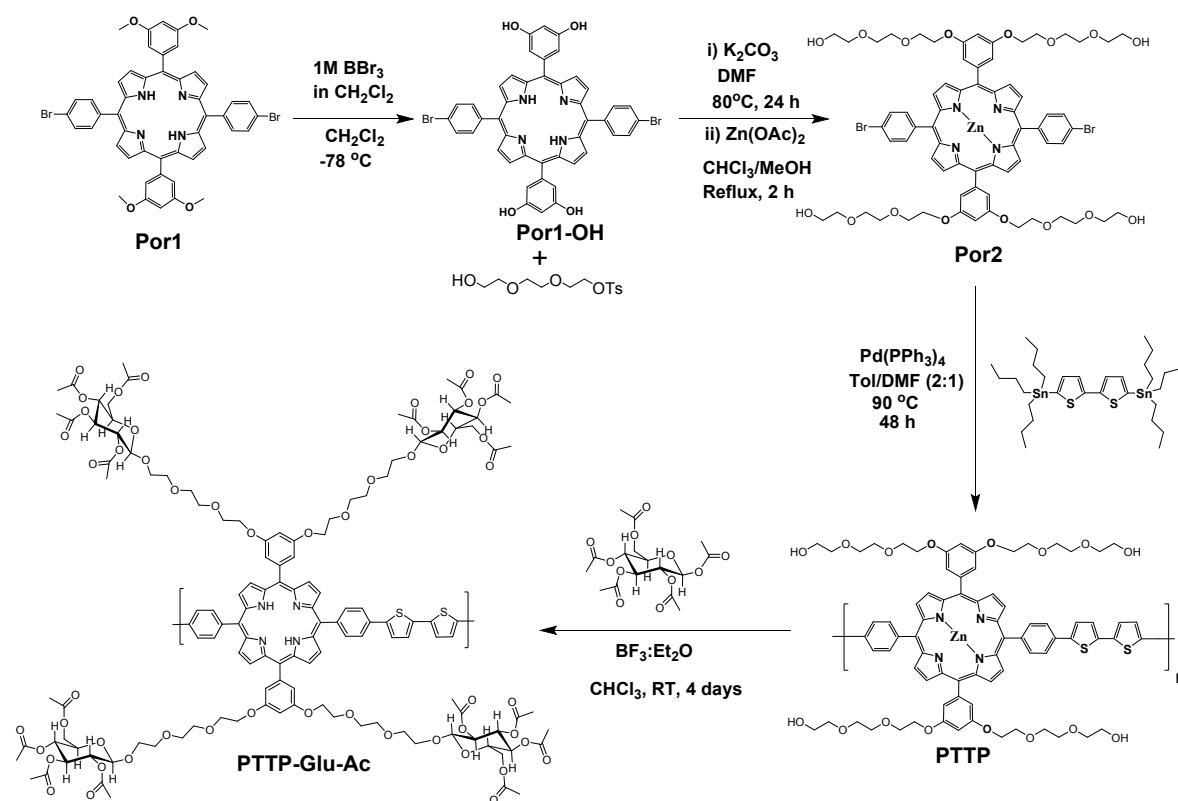
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Synthetic scheme:



Scheme S1. Synthetic scheme for the glucosylation of poly-5,15-diphenyl(2,5'-dithienylene)-10,20-di(3,5-di-O-TEG-phenyl) porphyrin (**PTTP**).

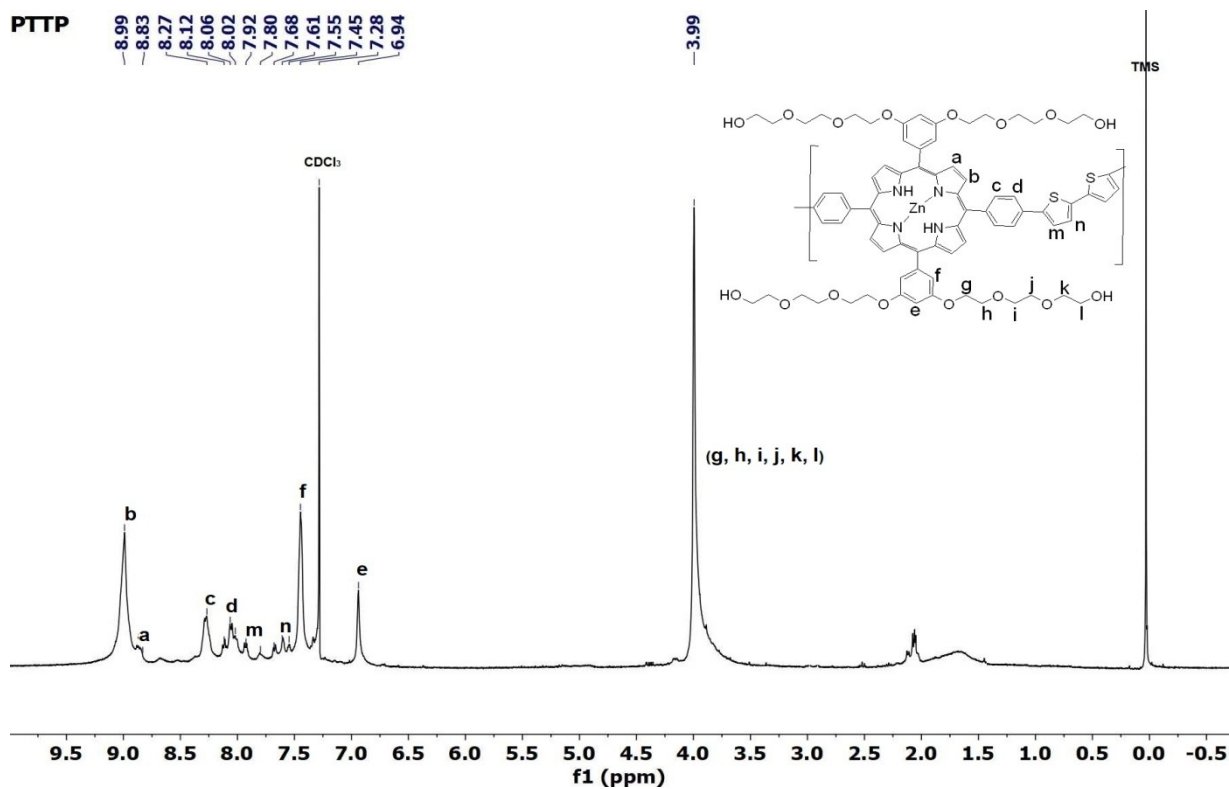


Fig. S1 ¹H NMR spectrum (400 MHz, CDCl₃, 25 °C) of **PTTP**.

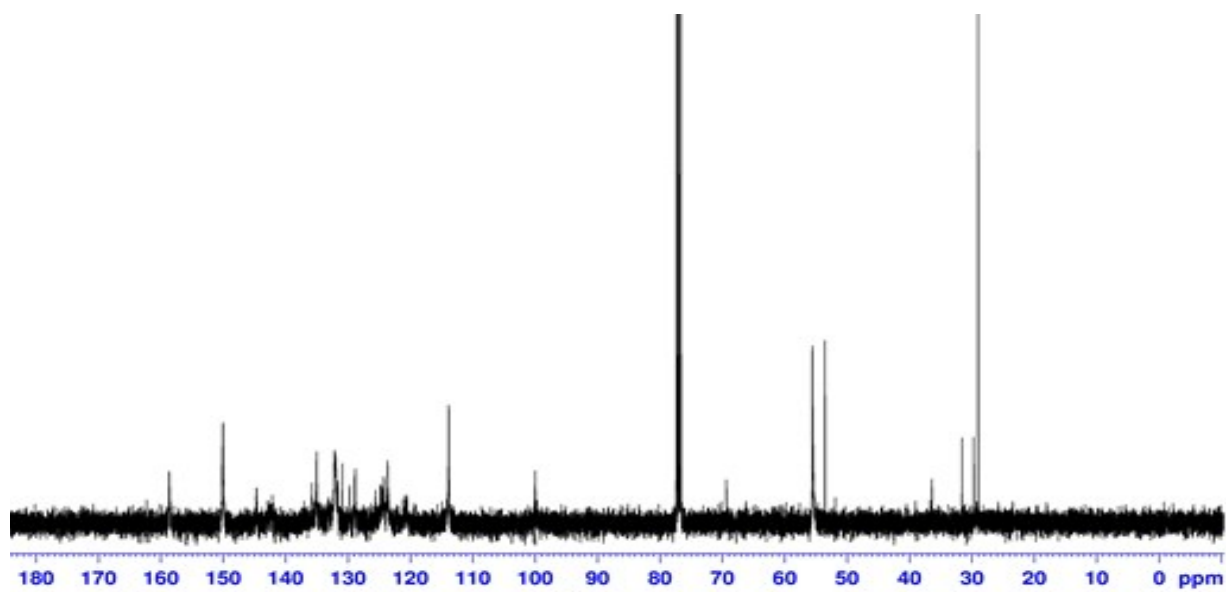


Fig. S2 ¹³C NMR spectrum (100 MHz, CDCl₃, 25 °C) of **PTTP**.

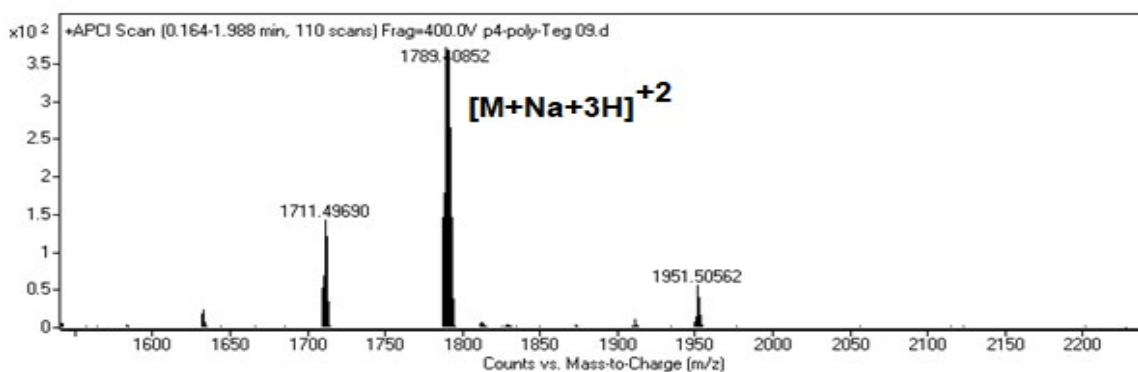


Fig. S3 ES-MS spectrum of PTTP.

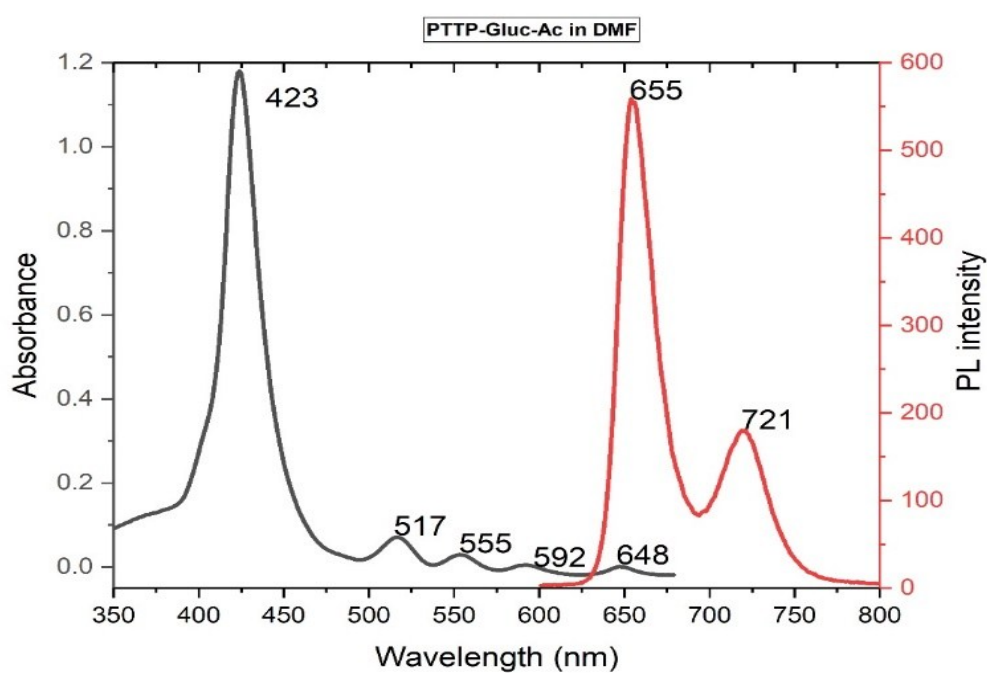


Fig. S4 UV-Vis absorbance and PL spectra of PTTP-Glu-Ac in DMF.

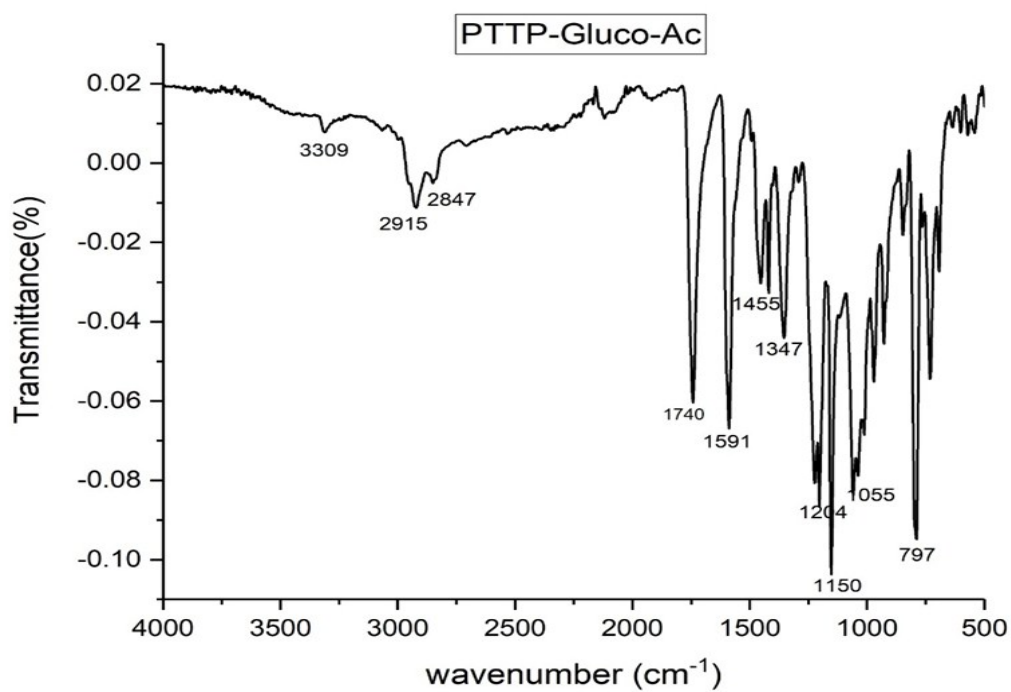


Fig. S5 FT-IR spectrum of PTTP-Glu-Ac.

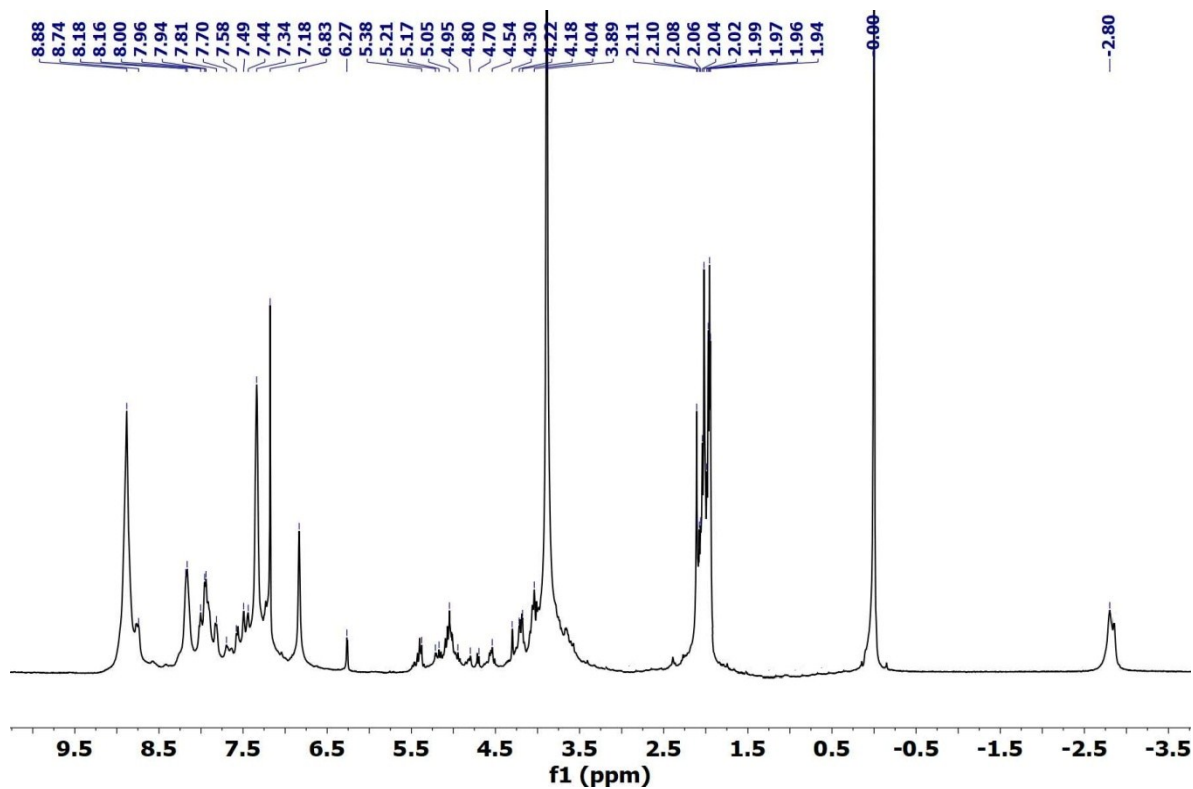


Fig. S6 ^1H NMR spectrum (400 MHz, CDCl_3 , 25 °C) of PTTP-Glu-Ac.

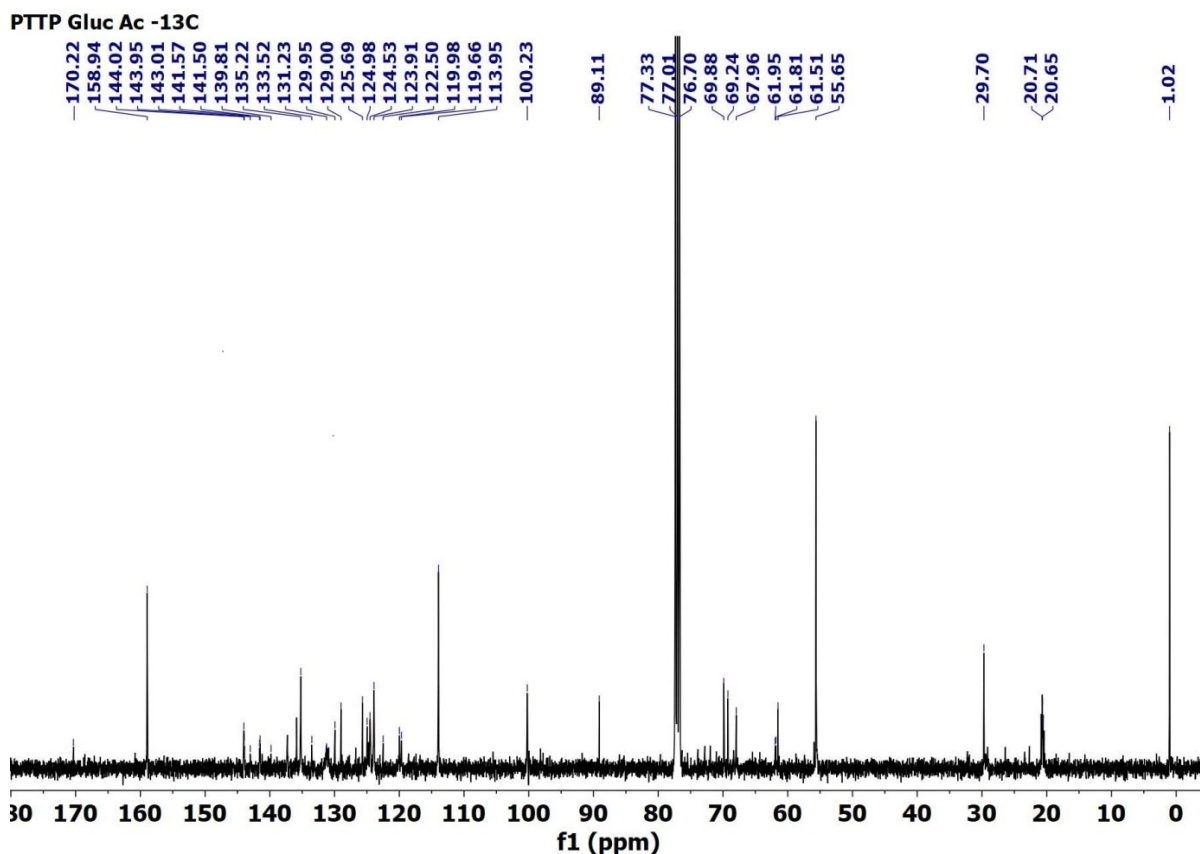


Fig. S7 ^{13}C NMR spectrum (100 MHz, CDCl_3 , 25 °C) of PTTP-Glu-Ac.

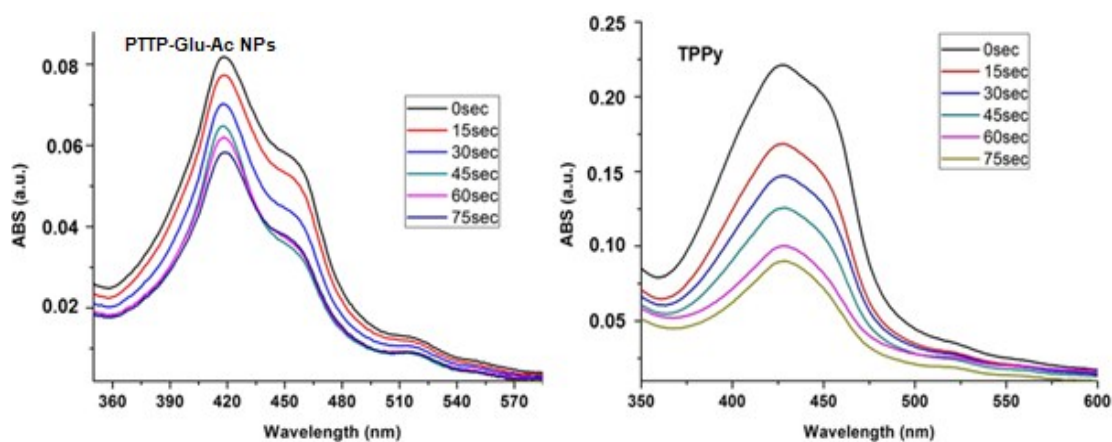


Fig. S8 Time-dependent decrease of absorbance at 418 nm by oxidation of DPBF (20 μM) and PTTP-Glu-Ac NPs (0.5 μM , per repeating unit) or 5,10,15,20-Tetrakis(1-methyl-pyridinium-4-yl)porphyrin (TPPy) (0.5 μM) in $\text{D}_2\text{O}:\text{DMF}$ (15:1).

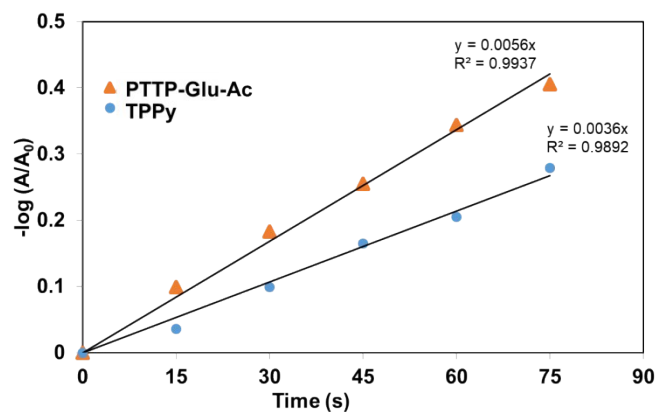


Fig. S9 Linearized plots based on the decrease in the absorbance intensity of DPBF in the presence of NPs and TPPy irradiated at 430 nm with 15 sec. intervals.

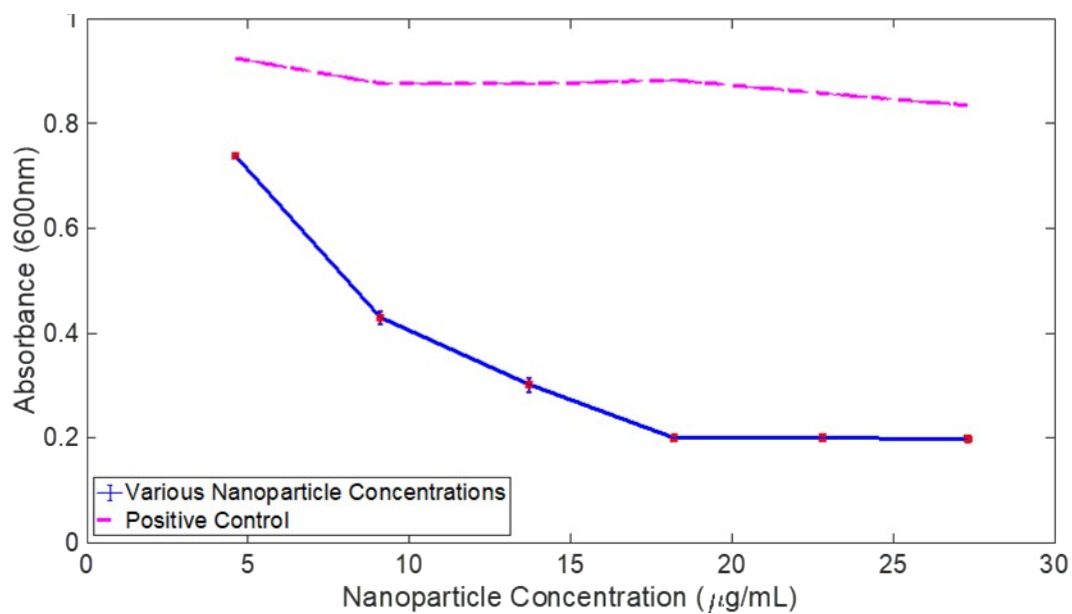


Fig. S10 Minimum Inhibitory Concentration (MIC) assay for varying nanoparticle concentration under light irradiation. Error bars represent SD of data from three separate measurements.

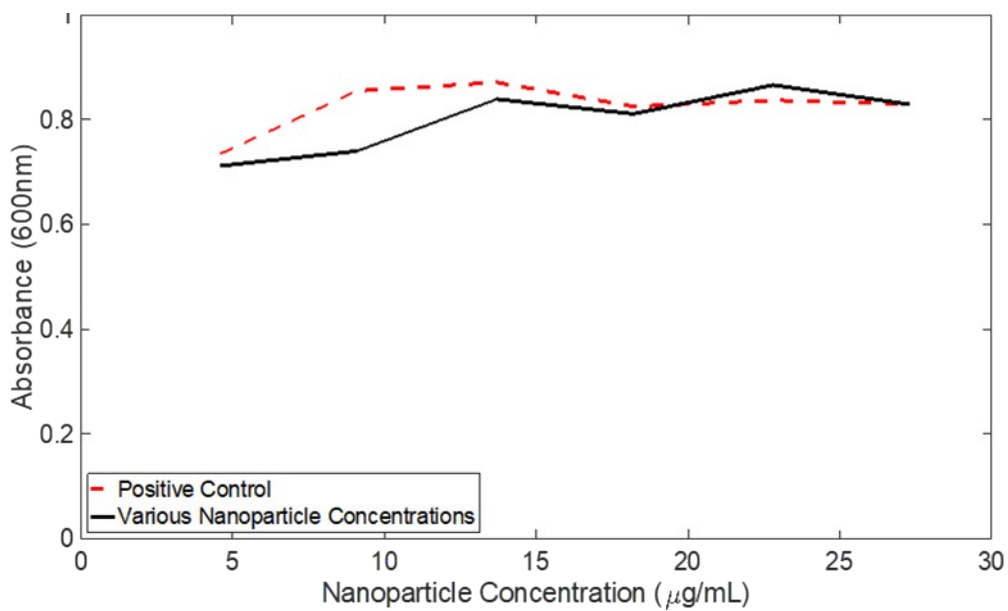


Fig. S11 Minimum Inhibitory Concentration (MIC) assay for varying nanoparticle concentration in the dark.

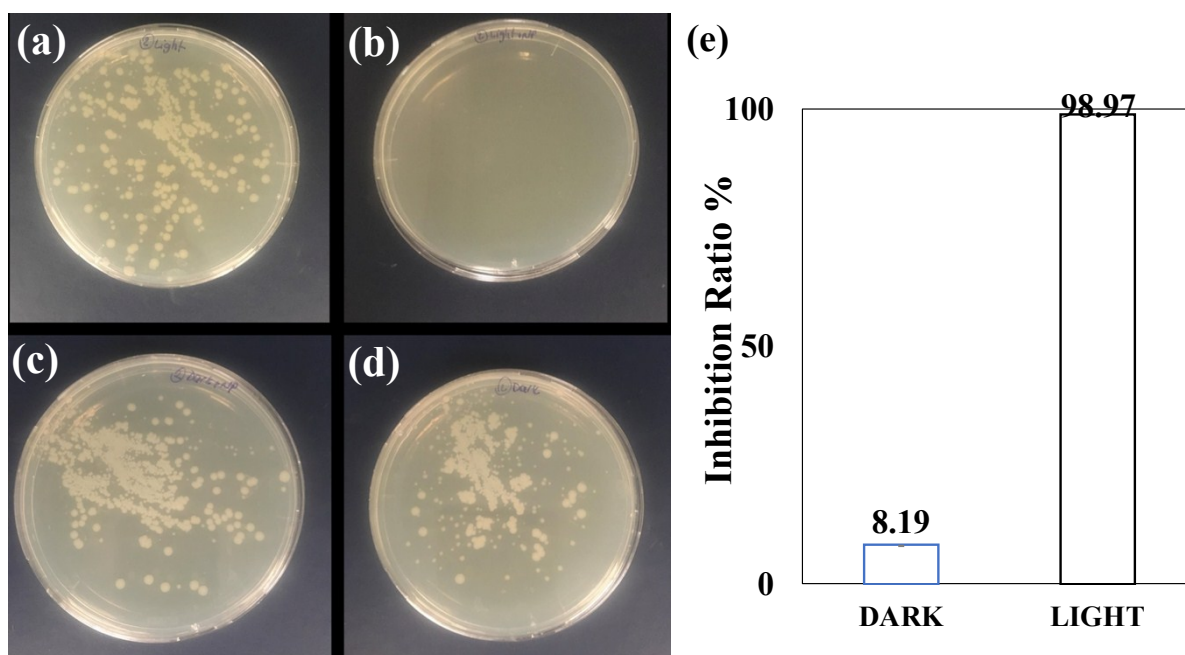


Fig. S12 Plate photographs for *Bacillus subtilis* on YTD agar plate treated a) without photosensitizer under photo-irradiation (with flux of 22 mW/cm^2 white light for 10 min.), b) with photosensitizer under photo-irradiation (with white light flux of 22 mW/cm^2 for 10 min.), c) without photosensitizer in the dark, d) with photosensitizer in the dark; e) Biocidal activities of NPs toward *Bacillus subtilis* under photo-irradiation and in the dark.