

# Self-assembly of porphyrin-grafted lipid into nanoparticles encapsulating doxorubicin for synergistic chemo-photodynamic therapy and fluorescence imaging

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**Keywords:** porphyrin, doxorubicin, theranostics, chemotherapy, photodynamic therapy

## Supporting Information

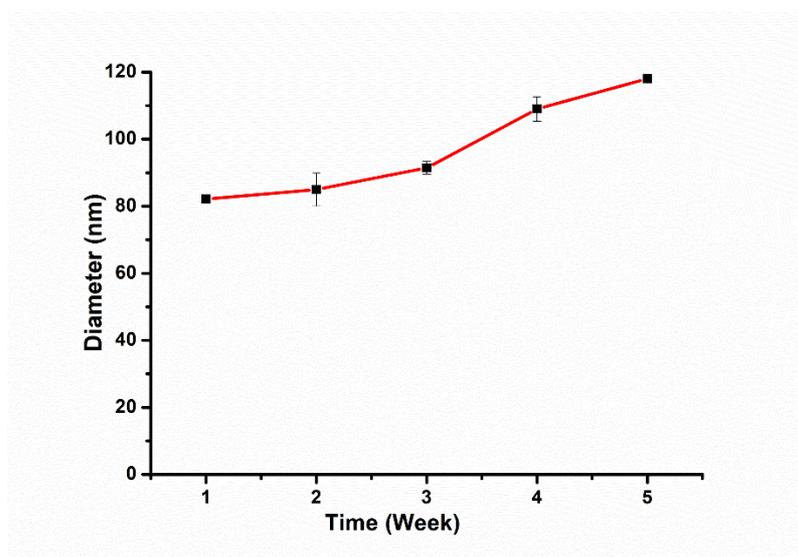
**Supplementary Table S1: Physicochemical Properties of Different Formulations of PGL-DOX NPs**

Lipid composition DSPC:Chol:PGL:DSPE-PEG 2000	Effective Diameter (nm) $\pm$ SD	PDI	EE (%)	DL (%)
50:30:10:10	113.27 $\pm$ 3.5	0.168	>82	7.4 $\pm$ 0.9
50:35:10:5	108.45 $\pm$ 3.28	1.94	>85	9.9 $\pm$ 0.1
52:33:10:5	82.13 $\pm$ 6.71	0.151	>99	10 $\pm$ 0.3

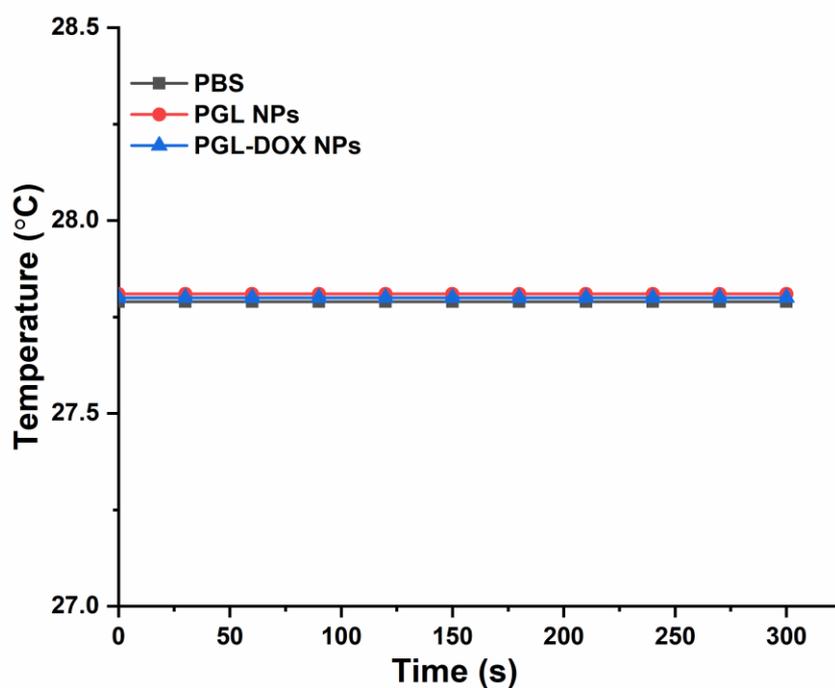
PGL: porphyrin-grafted lipid; PDI: polydispersity index; EE: encapsulation efficiency



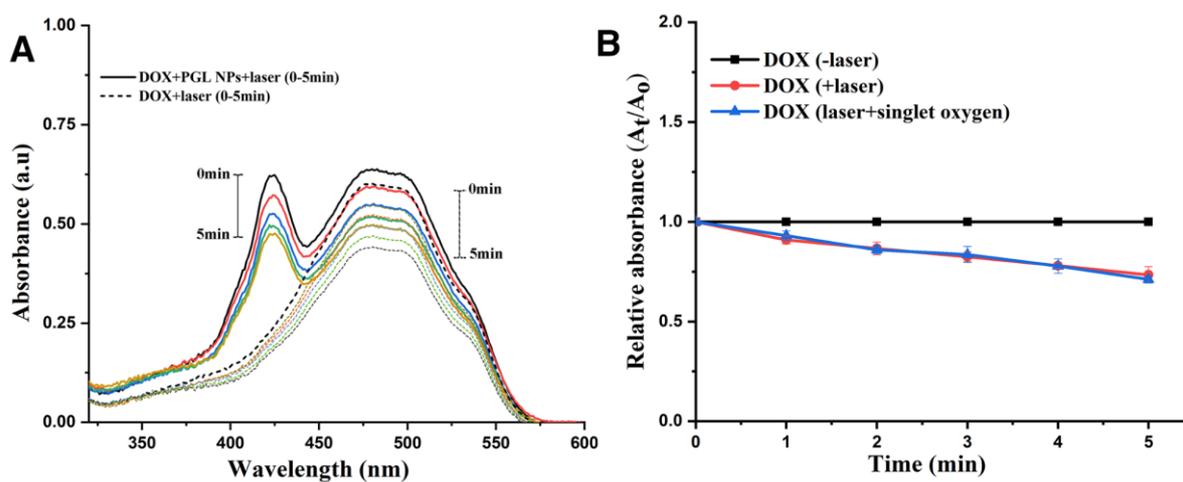
**Supplementary Figure S1: Image representing the encapsulation of DOX into PGL NPs.**



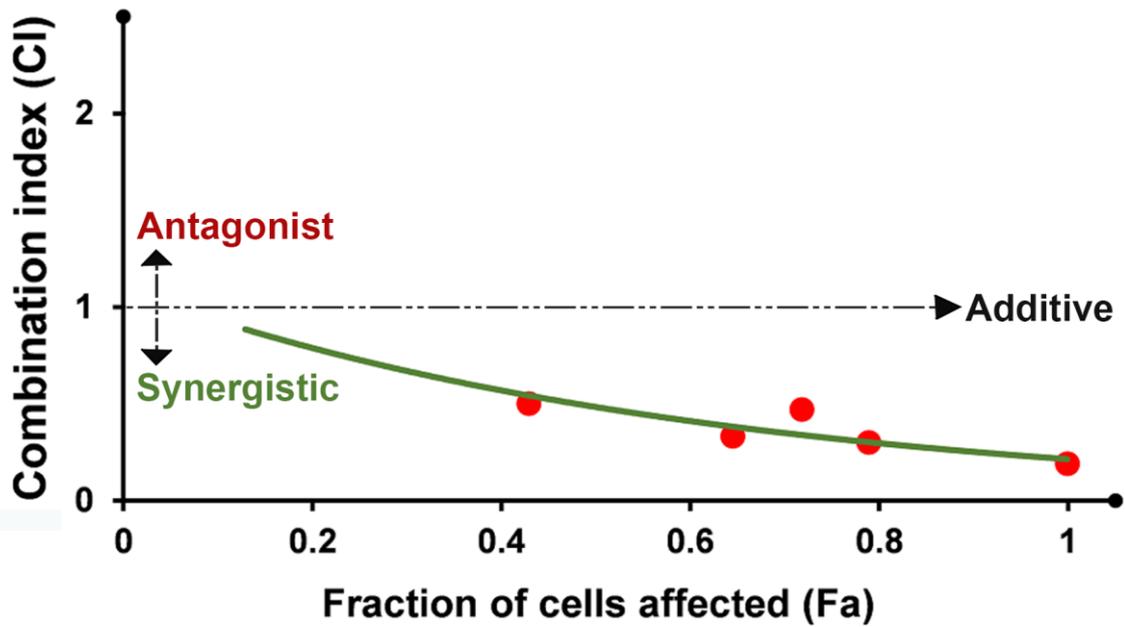
**Supplementary Figure S2:** Colloidal stability test for PGL-DOX NPs in water.



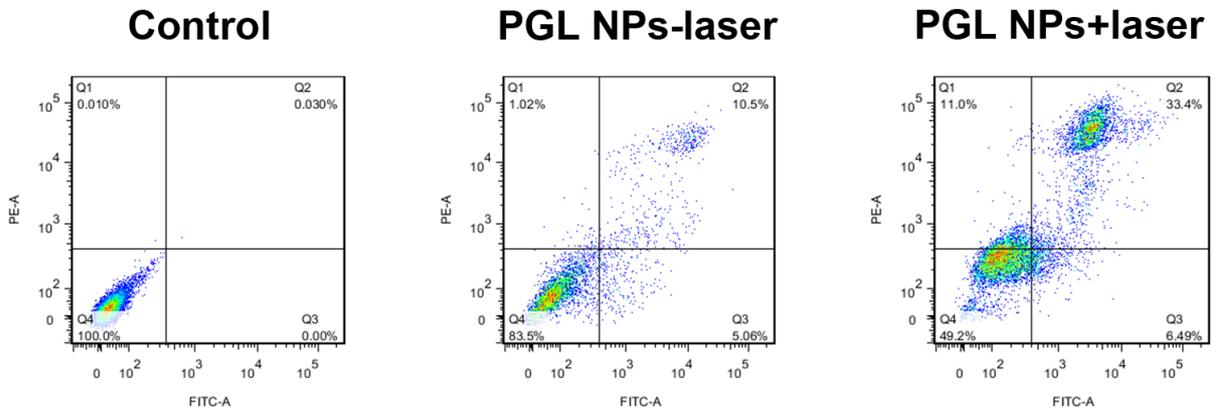
**Supplementary Figure S3:** Temperature elevation monitoring during PDT process; *in vitro* temperature-time curves of PBS, PGL-NPs and PGL-DOX NPs solution upon irradiation of 650nm laser.



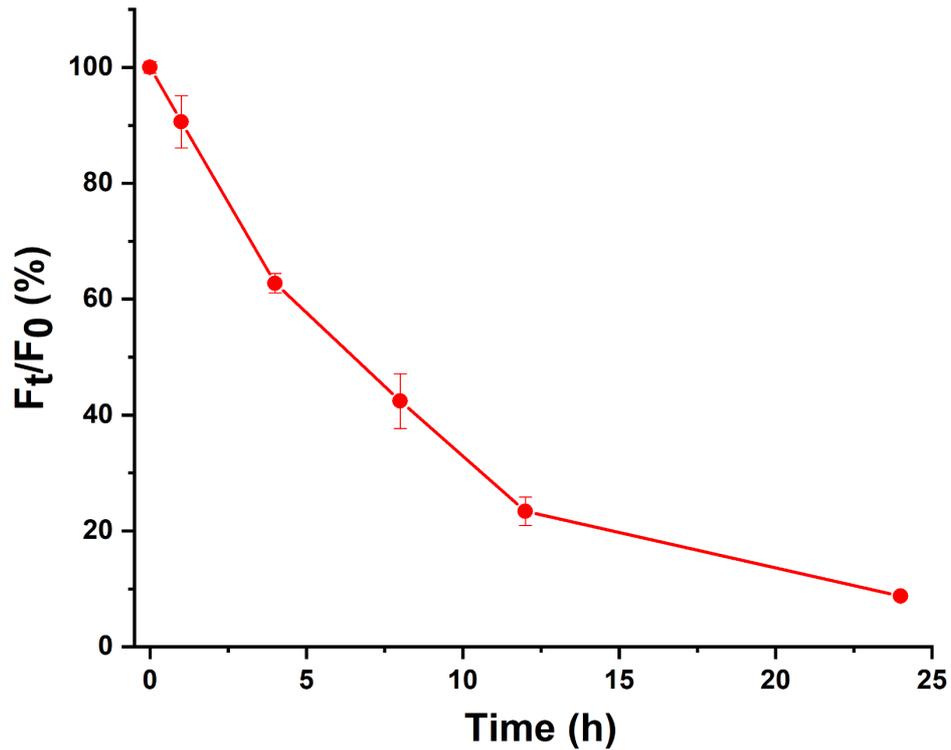
**Supplementary Figure S4:** (A) absorption spectra of DOX in the presence of singlet oxygen (B) relative absorbance of DOX in the presence of singlet oxygen. Data are presented as mean  $\pm$  SD (n=3).



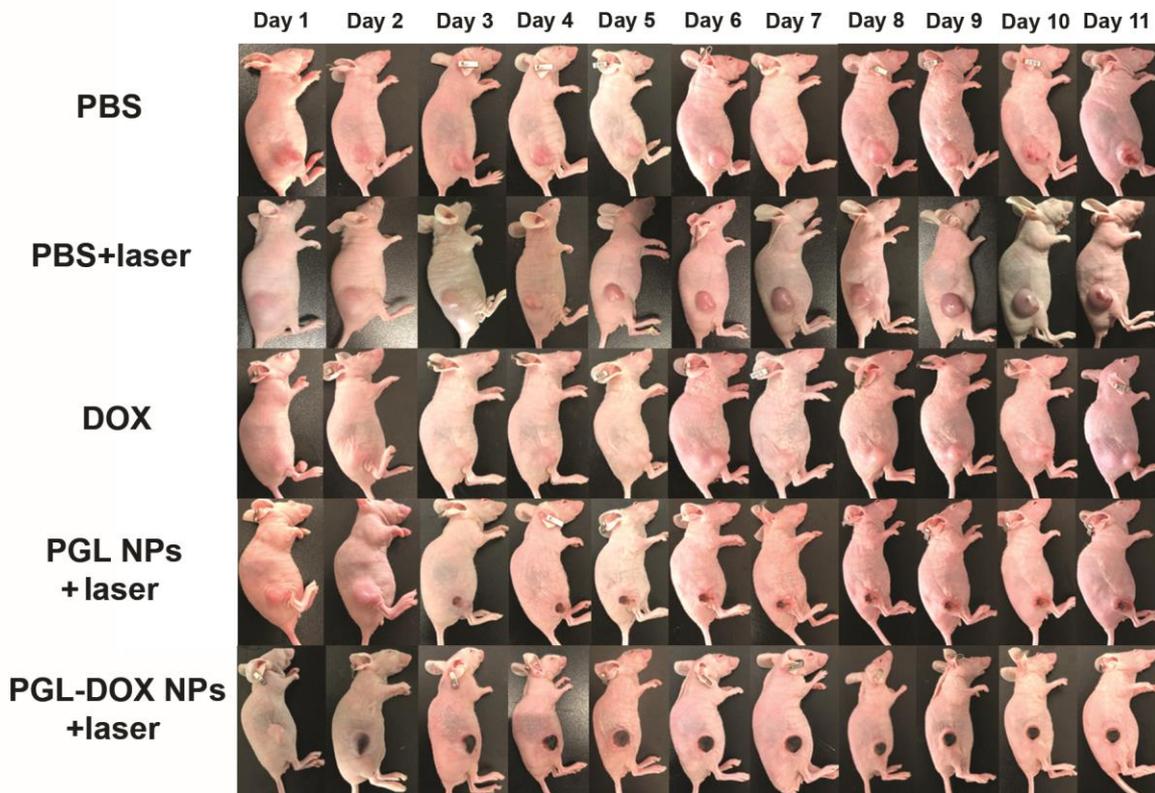
**Supplementary Figure S5:** The combination index (CI)-plot of HeLa cells treated with PGL-DOX NPs mediated chemophotodynamic therapy. CI was calculated with Compusyn software.



**Supplementary Figure S6:** Flow cytometry analysis of tumor cells apoptosis induced by PGL NPs with and without laser irradiation based on Annexin V-FITC/PI staining.



**Supplementary Figure S7:** Plasma clearance of PGL NPs measured by fluorescence intensity of PGL in the blood (n = 3). Fluorescence intensities  $F_0$  and  $F_t$  of the porphyrin molecules at the initial and the given time, respectively.



**Supplementary Figure S8:** Representative photographs of tumor bearing mice after different treatments.