Table S1. Compositions and pH of simulated lung fluids, Gamble's Solution and ALF.

Compositions	Concentration (g/L)	
	Gamble's Solution	ALF
$MgCl_2$	0.095	0.050
NaCl	6.019	3.210
KCl	0.298	-
Na_2HPO_4	0.126	0.071
Na_2SO_4	0.063	0.039
$CaCl_2\ 2H_2O$	0.368	0.128
$C_2H_3O_2Na$	0.547	-
$NaHCO_3$	2.604	-
$C_6H_5Na_3O_7\ 2H_2O$	0.097	0.077
NaOH	-	6.000
$C_6H_8O_7$	-	20.800
H_2NCH_2COOH	-	0.059
$C_4H_4O_6Na_2\ 2H_2O$	-	0.090
$C_3H_5NaO_3$	-	0.085
$C_3H_3O_3Na$	-	0.086
pH	7.4	4.5

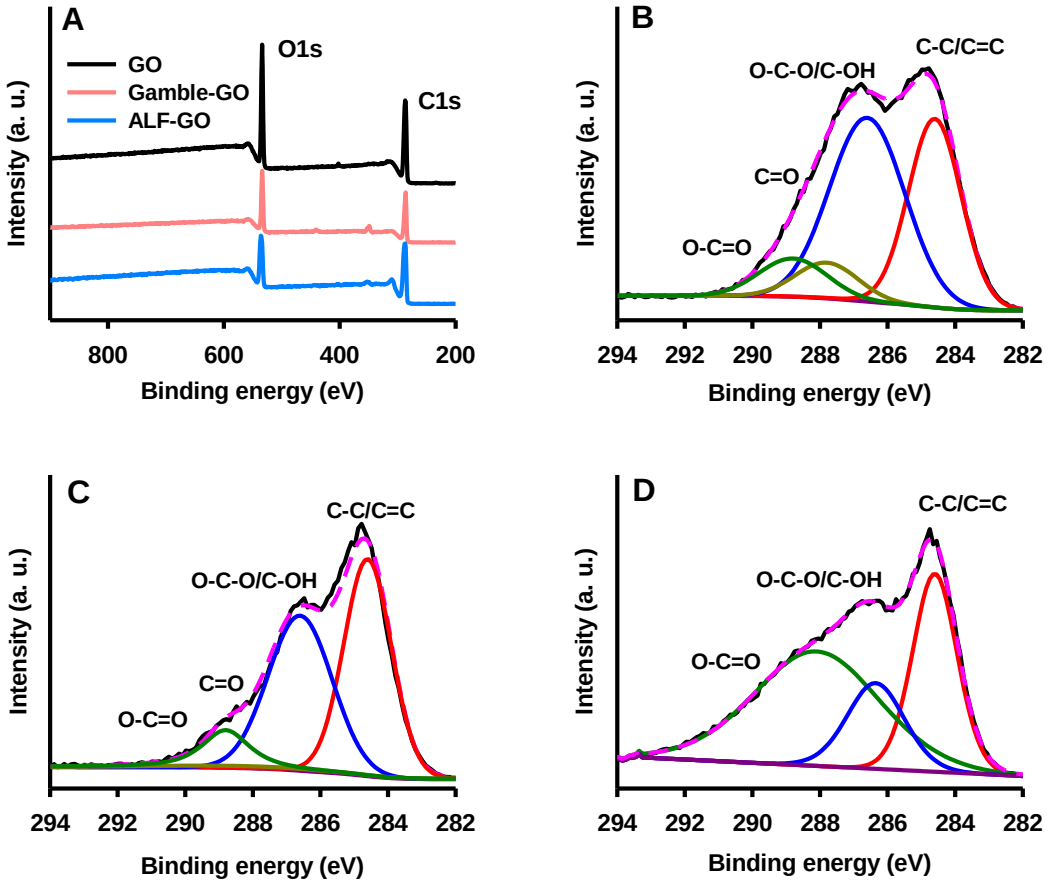

Figure S1. XPS general spectra (A), and the deconvoluted peaks of the C1s spectra of XPS for (B) pristine GO, (C) Gamble-GO and (D) ALF-GO. The peaks with the binding energy of 284.6, 286.6, 287.8 eV and 288.8 eV are assigned to the carbon atoms in aromatic rings (C-C/C=C), epoxy/hydroxyl (C-O-C/C-OH), carbonyl (C=O) and carboxyl (O-C=O), respectively.

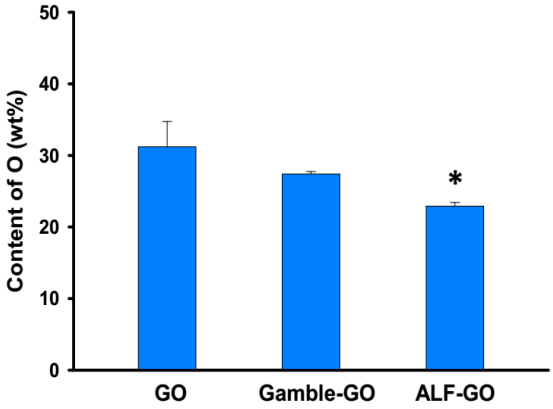

Figure S2. Total oxygen contents of pristine GO, Gamble-GO and ALF-GO. Asterisk (*) indicates $P < 0.05$, compared to pristine GO.

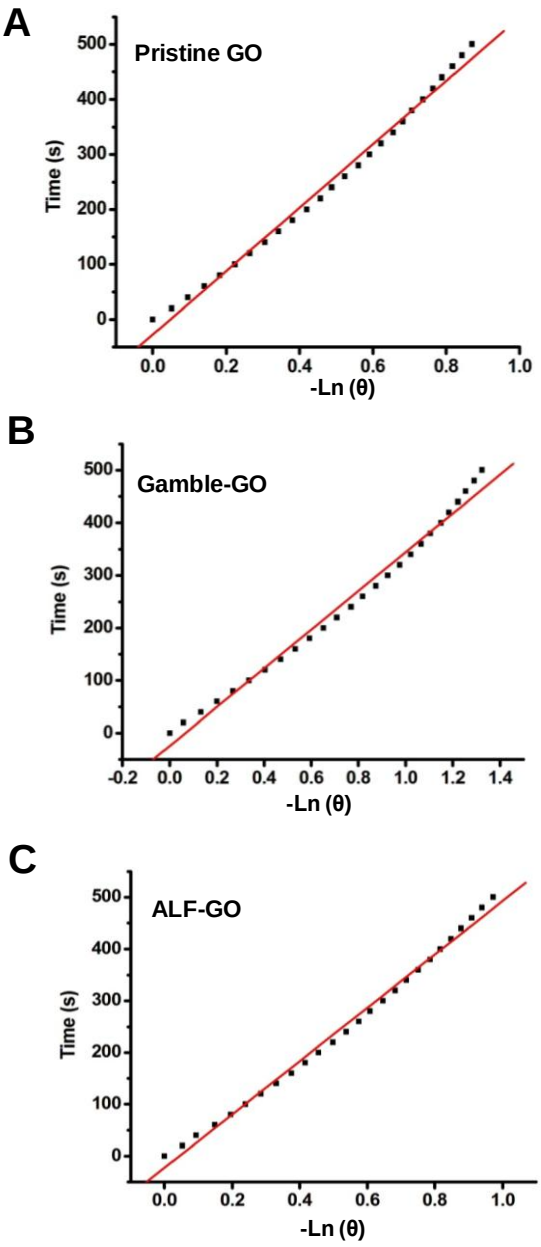

Figure S3. Tendency of cooling time versus negative natural logarithm of the temperature obtained from cooling stage as shown in Figure 3B.

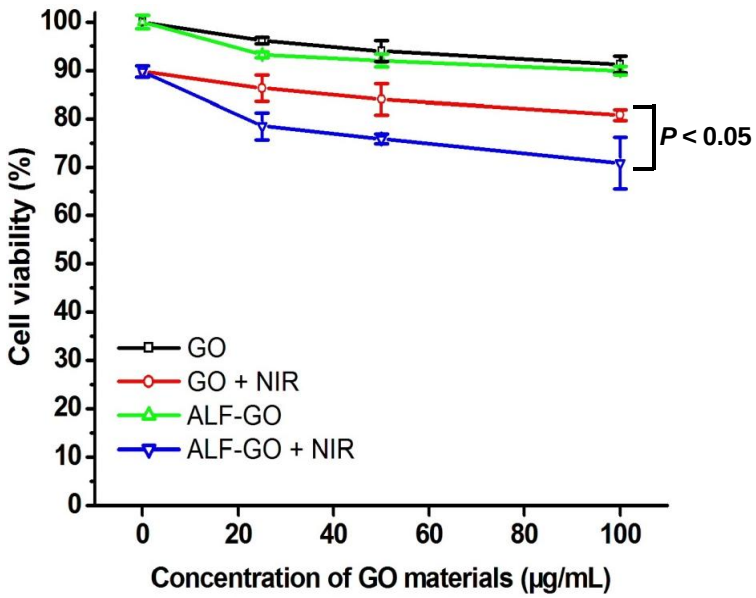

Figure S4. Cell viability assay of 4T1 cells (relative to cells with no material addition or NIR radiation) after incubation with different concentrations of materials with or without 808 nm irradiation at a power density of 2 W/cm^2 for 5 min (n = 4).

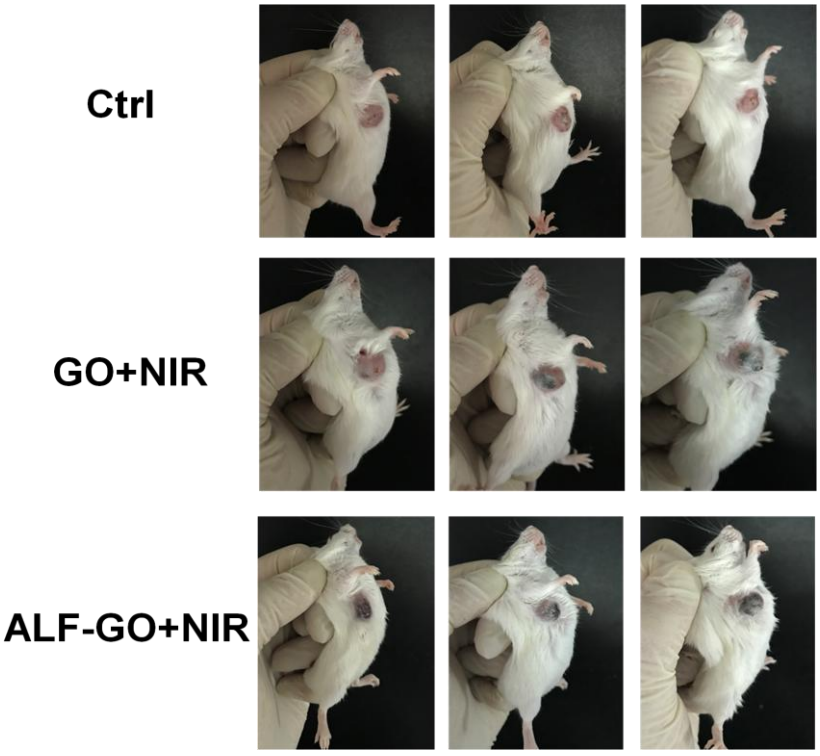

Figure S5. The representative images of tumors after material injection and PTT for 300 s.

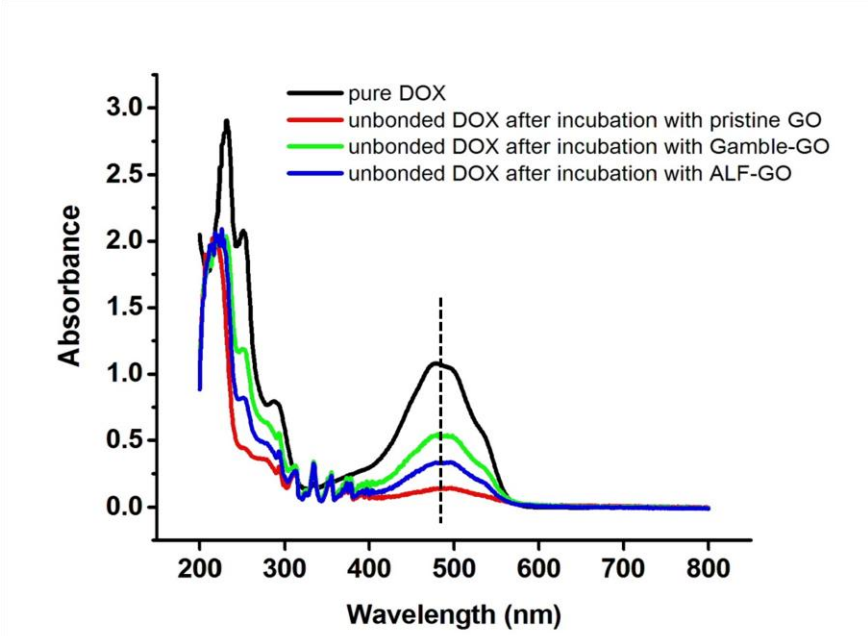

Figure S6. UV-vis spectra of pure DOX and unbounded DOX after incubation with pristine GO, Gamble-GO and ALF-GO.