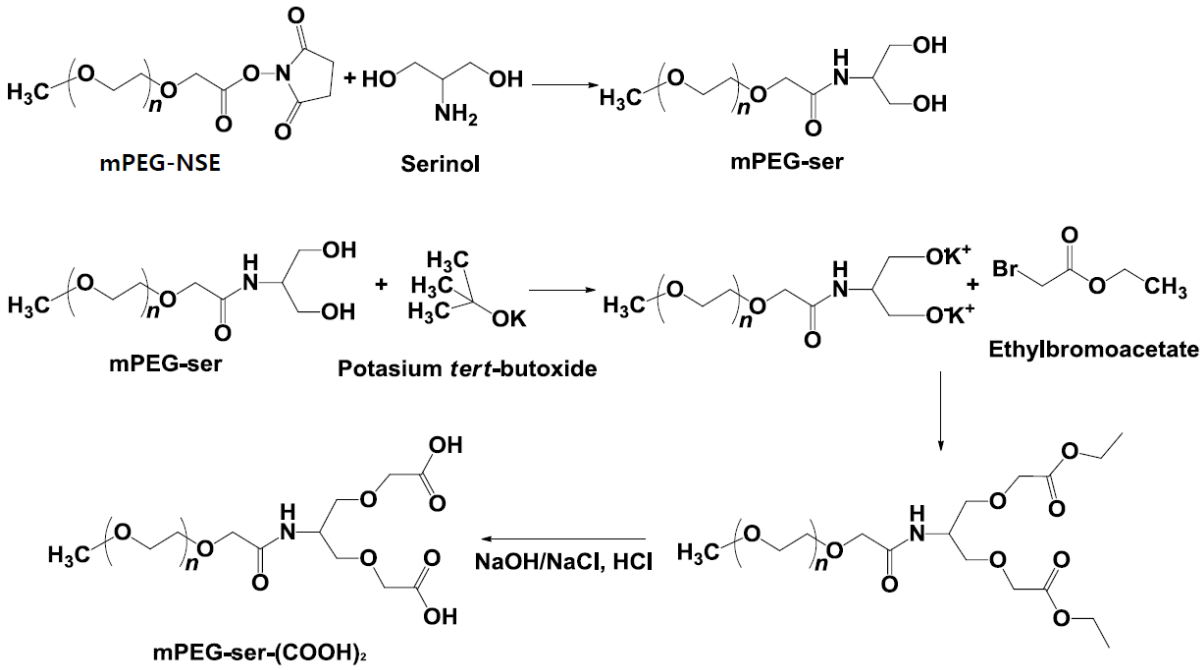
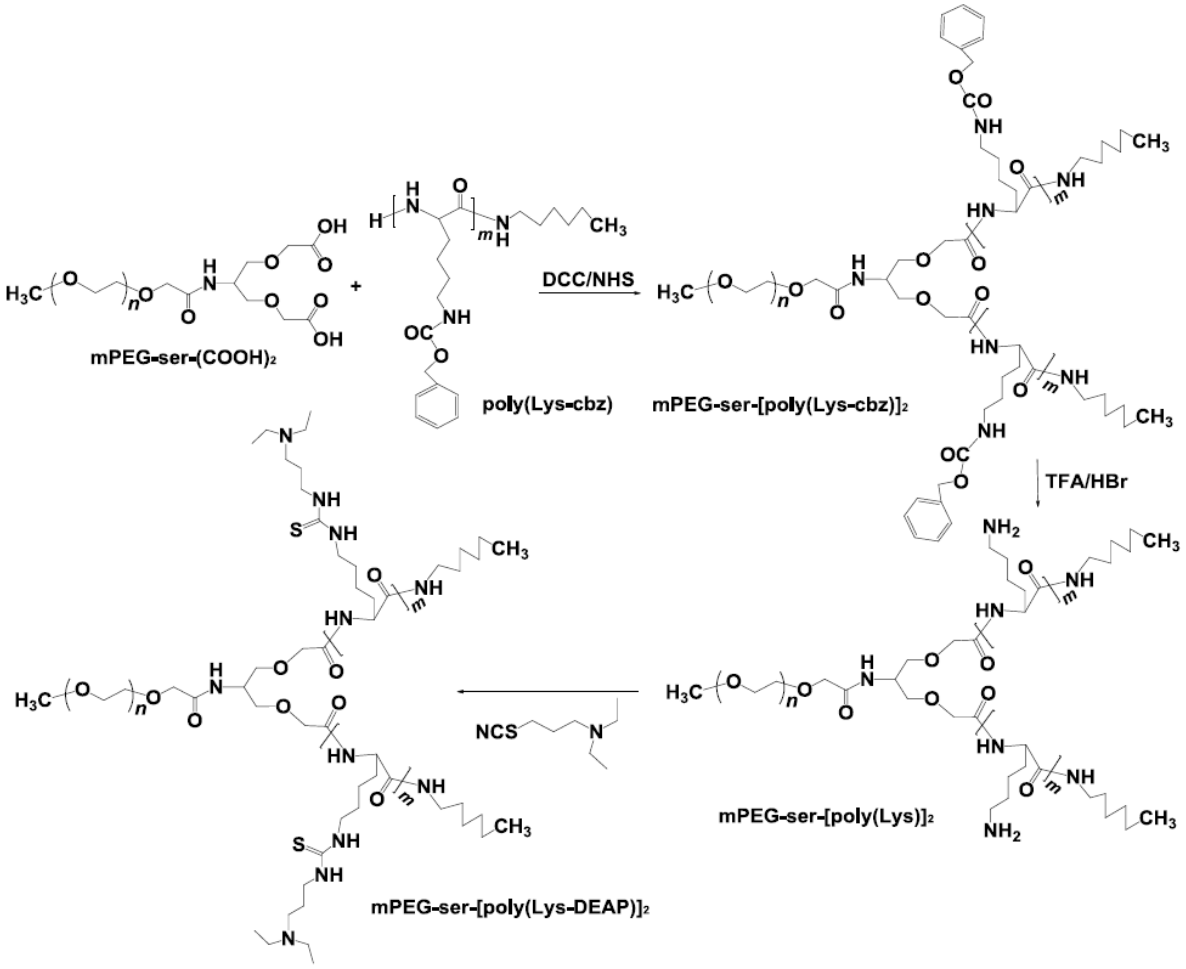
Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

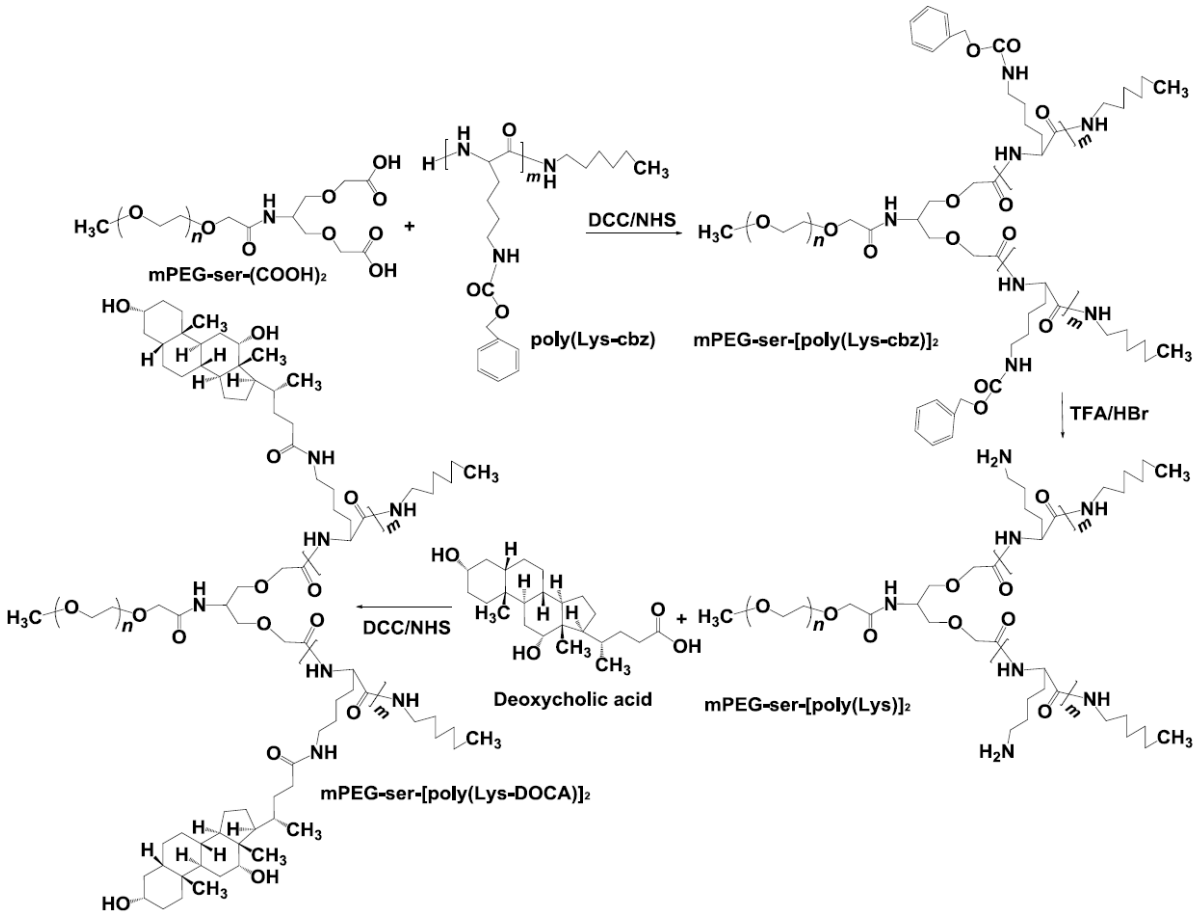
Electronic Supplementary Information



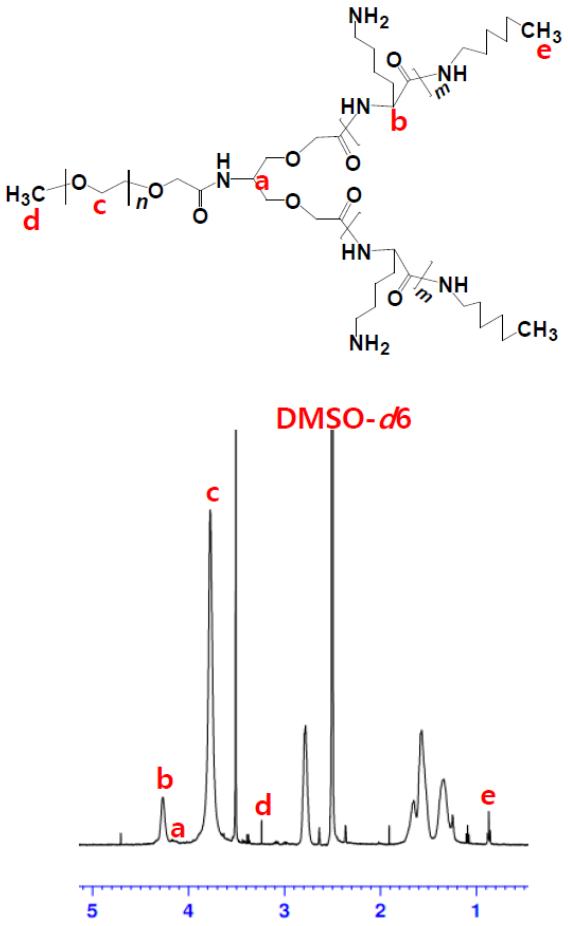
Supplementary Fig. S1. Synthesis scheme of mPEG-Ser-$(COOH)_2$.



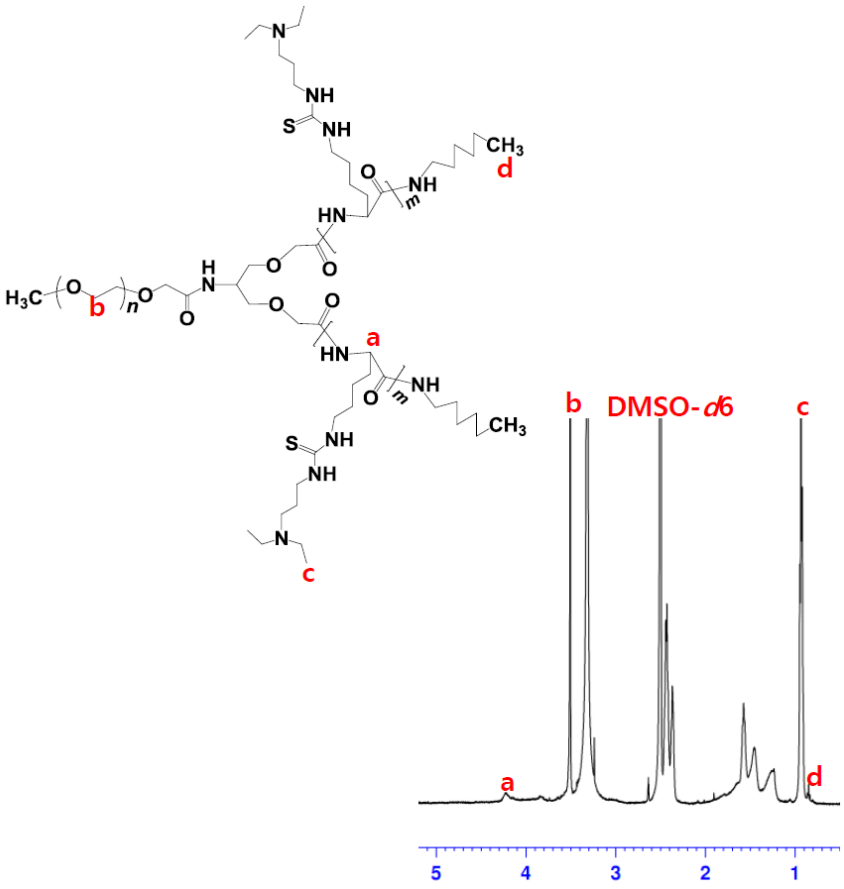
Supplementary Fig. S2. Synthesis scheme of mPEG-ser-[poly(Lys-DEAP)]$_2$.



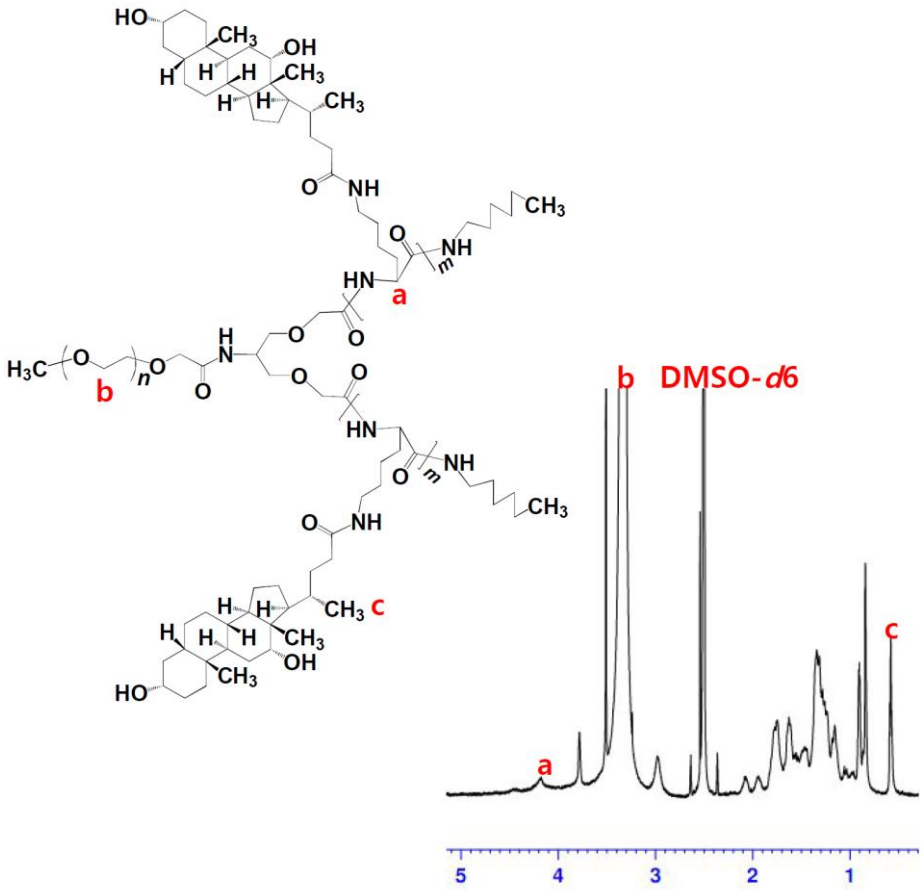
Supplementary Fig. S3. Synthesis scheme of mPEG-ser-[poly(Lys-DOCA)]$_2$.



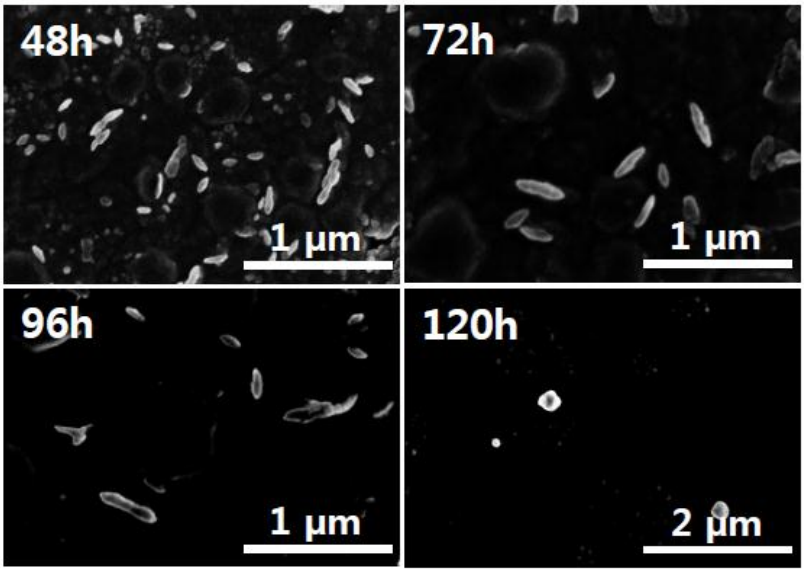
Supplementary Fig. S4. ^{1}H-NMR peaks of mPEG-ser-[poly(Lys)]$_{2}$.



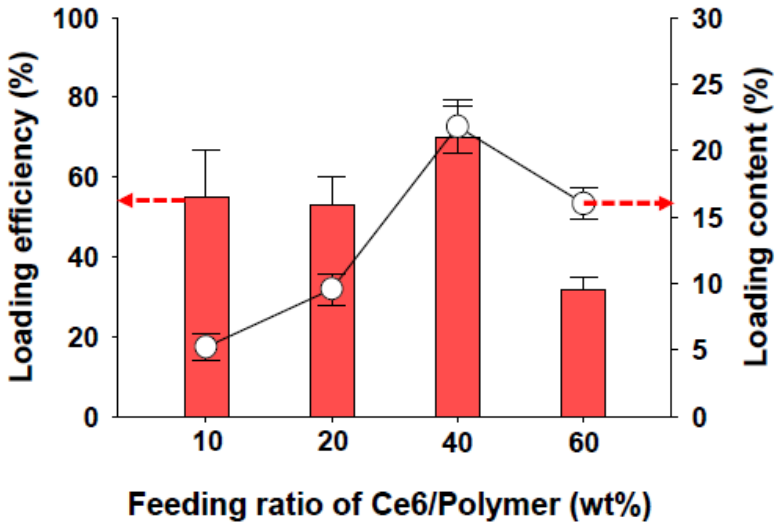
Supplementary Fig. S5. ^{1}H-NMR peaks of mPEG-ser-[poly(Lys-DEAP)]$_{2}$.



Supplementary Fig. S6. ^{1}H-NMR peaks of mPEG-ser-[poly(Lys-DOCA)]$_{2}$.

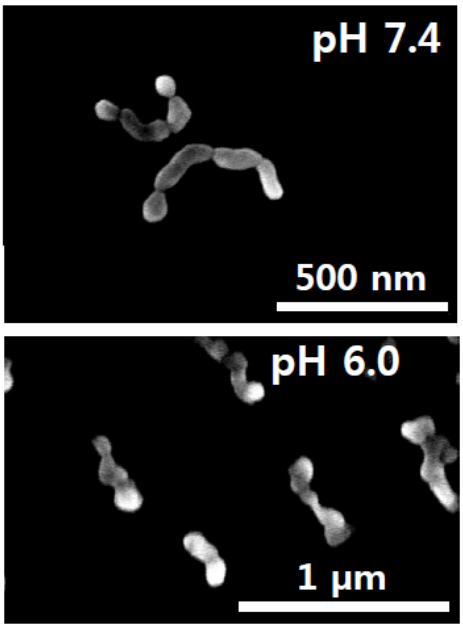


Supplementary Fig. S7. Time-dependent morphological change in PHWM in PBS 7.4 containing FBS (10 wt.%) and sodium azide (0.05 wt.%) under mechanical shaking (100 *rev*./min) at 37 °C. As a result, the PHWM displayed a negligible morphological change over 4 days in serum-containing medium. However, the PHWM underwent fragmentation in 120 h, probably due to the mechanical shear stress (100 *rev*./min) at 37 °C.[2,3]

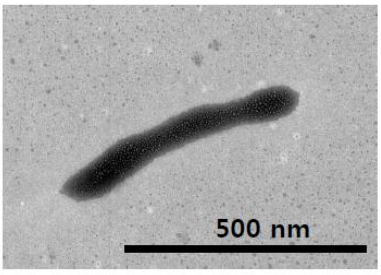


Supplementary Fig. S8. The Ce6 loading efficiency of PHWM based on the feeding ratio of Ce6 (wt.%) to the mPEG-ser-[poly(Lys-DEAP)]$_2$ polymer (n=3). The Ce6 loading efficiency (%) was defined as the weight percentage of Ce6 encapsulated in the micelle relative to the initial feeding amount of Ce6. The Ce6 loading content (%) was defined as the weight percentage of Ce6 entrapped within the micelles relative to the total mass of the Ce6-loaded micelles.

As the Ce6 feeding ratio (wt.%) increased, the Ce6 loading content of the PHWM rapidly increased. However, at a high Ce6 feeding ratio (60 wt.%), the Ce6 loading content of the PHWM decreased, which may have been due to the limited space available to accommodate the Ce6 or quick Ce6 aggregation (precipitation) due to the high concentration of insoluble Ce6.

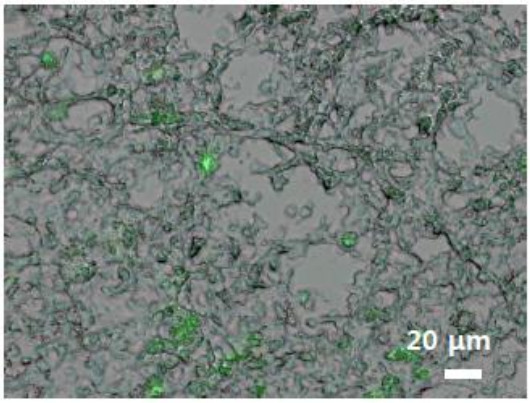


Supplementary Fig. S9. FE-SEM images of the WM at different pH values.



Supplementary Fig. S10. Transmission electron microscope (TEM; JEM 1010, Japan) image of the Ce6-loaded PHWM at pH 7.4.

Here, the morphology of the Ce6-loaded PHWM was confirmed using a transmission electron microscope (TEM; JEM 1010, Japan). The micelles were mounted onto carbon-coated copper grids and examined using a TEM operated at 60 kV and a CCD camera (SC1000 Orion, USA).



Supplementary Fig. S11. Fluorescence images of *in vivo* tumor tissues from KB tumor-bearing nude mice (tumor size: ~100 mm^3) treated with FITC-conjugated WM (equivalent Ce6 10 mg/kg) (green fluorescence: FITC).

Supplementary Table S1. IC50 values obtained on KB tumor cells treated with each sample. The KB tumor cells treated for 8 h with each sample at pH 7.4, 6.8, or 6.0 were washed three times with fresh cell culture medium (without the samples), illuminated at a light intensity of 5.2 mW/cm^2 using a 670 nm laser source for 10 min, and then further incubated for 12 h.

	PHWM			WM			Free Ce6		
	pH 7.4	pH 6.8	pH 6.0	pH 7.4	pH 6.8	pH 6.0	pH 7.4	pH 6.8	pH 6.0
IC50	> 10μg/ml	1.7 μg/ml	1.4 μg/ml	> 10μg/ml	> 10μg/ml	> 10μg/ml	> 10μg/ml	> 10μg/ml	> 10μg/ml