Supporting Information

Poly(ε-caprolactone)-graft-poly(2-(*N,   N*-dimethylamino)   ethyl   methacrylate)

Nanoparticles: pH Dependent Thermo-Sensitive Multifunctional Carriers for Gene and

Drug Delivery

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Figure   S1   shows   the   GPC   spectra   of   macroinitiator   P(CL-co-BMPCL)   and

PCL-g-PDMAEMA. The zeta potential of 40.9 ± 0.9 mV in distilled water (Table S1) further

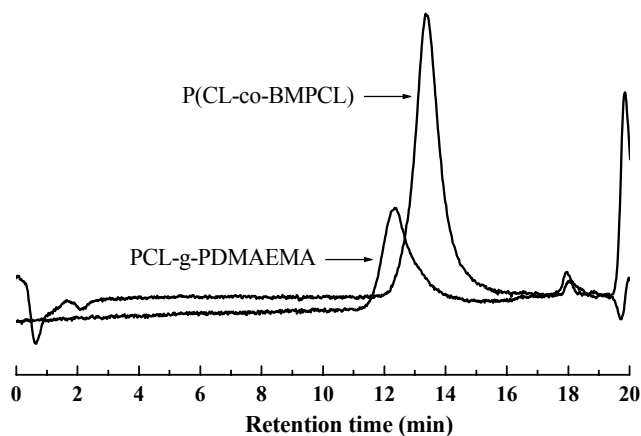indicates that the NPs are composed of PCL core and PDMAEMA shell.

Figure S1. GPC spectra of P(CL-co-BMPCL) and PCL-g-PDMAEMA.

Table S1. Zeta potential of PCL-g-PDMAEMA NPs in distilled water

	pH=4.5	pH=7.3
PCL-g-PDMAEMA NPs	50.4±1.77 mv	40.8±0.94 mv
PCL-g-PDMAEMA NPs/DNA (N/P=10)	18.9±0.9 mv	15.6±0.7 mv
4.70% paclitexel-loaded PCL-g-PDMAEMA NPs	43.0±4.32 mv	36.5±1.39 mv
12.5% paclitexel-loaded PCL-g-PDMAEMA NPs	42.5±2.41 mv	33.6±0.60 mv

Figure S2 is the plot of I_{338}/I_{333} (from pyrene excitation spectra) as a function of

PCL-g-PDMAEMA concentration in distilled water solution. The measured CAC of

PCL-g-PDMAEMA is about 8.1×10^{-4} g/L in pH=7.4 aqueous solution, which is 100 times

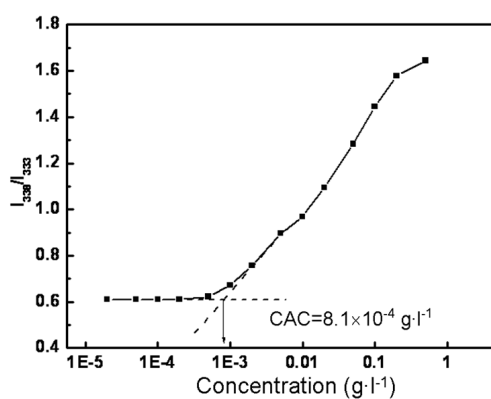lower than that of corresponding diblock copolymers.

Figure S2. Plot of I_{338}/I_{333} (from pyrene excitation spectra) vs concentration of

PCL-g-PDMAEMA22 in distilled water solution.

Figure S3 shows the I_{338}/I_{333} values of PCL-g-PDMAEMA NPs (A, pH=7.3) and PCL-g-PDMAEMA NPs/DNA polyplex NPs (N/P=10) at different pH values (B). The I_{338}/I_{333} value is almost changeless with DNA binding. Therefore, we can conclude that PCL-g-PDMAEMA NPs remain their integrity during DNA binding process.
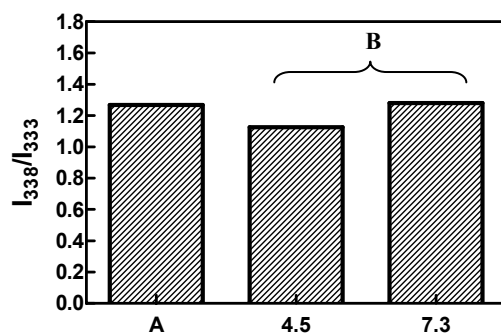

Figure S3. I_{338}/I_{333} values of PCL-g-PDMAEMA NPs (A, pH=7.3) and PCL-g-PDMAEMA NPs/DNA polyplex NPs (N/P=10) at different pH values (B).