

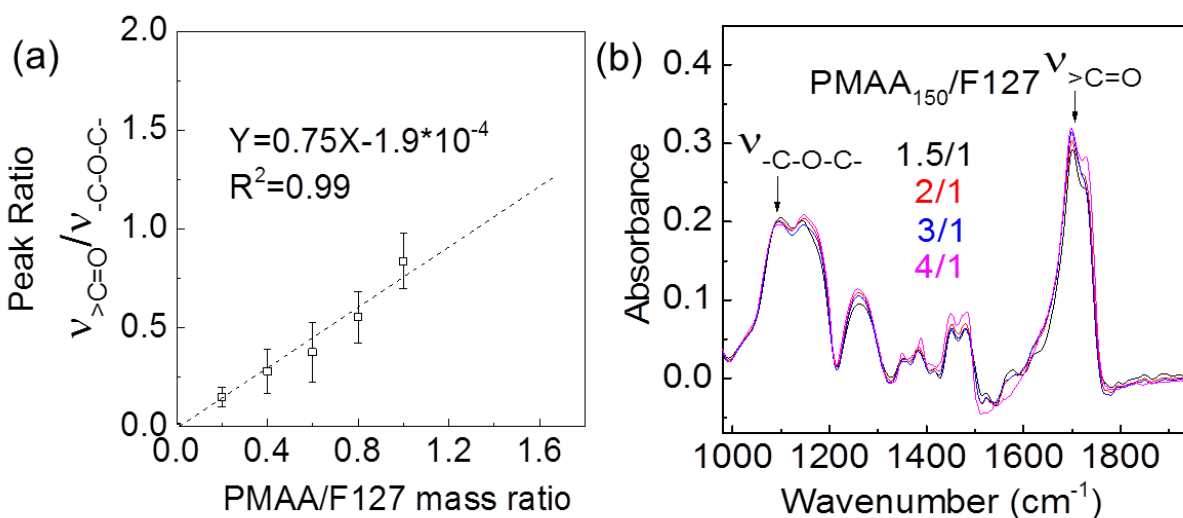
## SUPPORTING INFORMATION

### Hydrogen-Bonded Polymer Complexes and Nanocages of Weak Polyacids Templated by a Pluronic® Block Copolymer

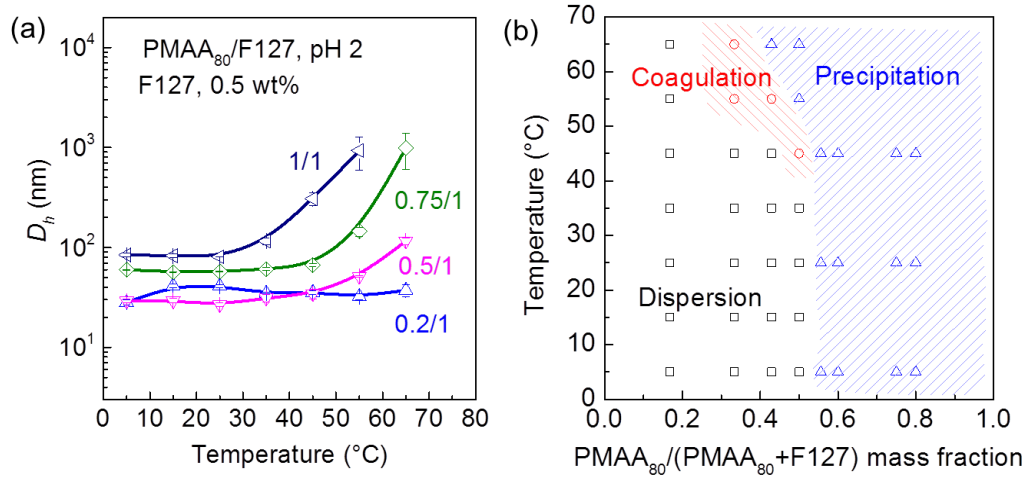
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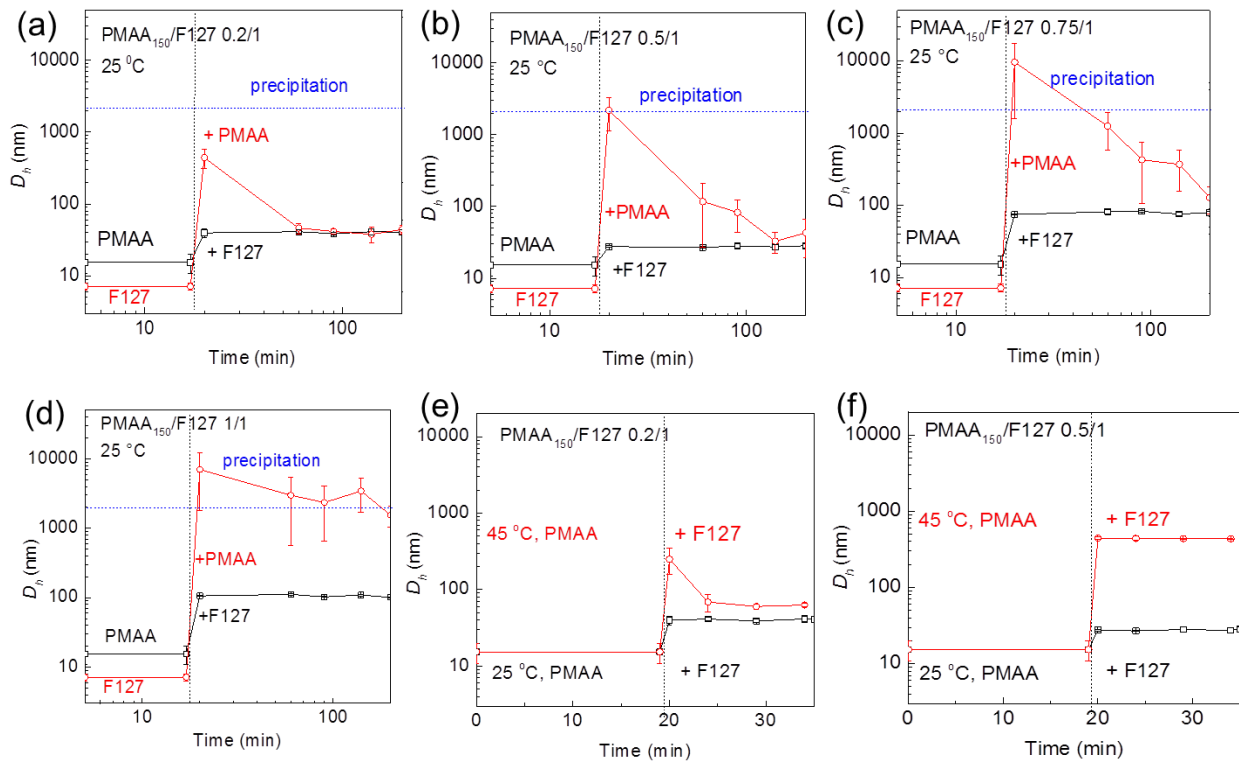
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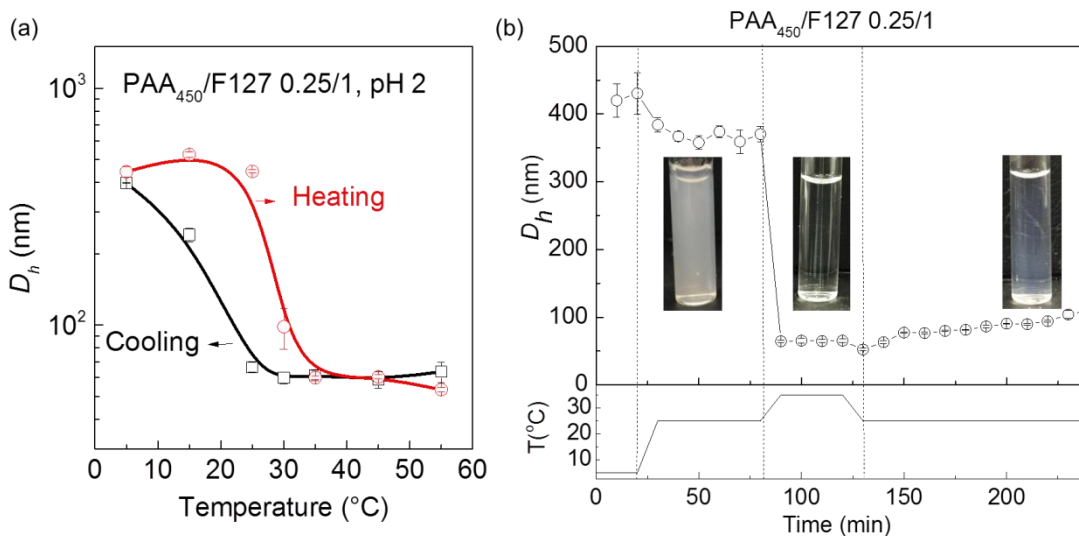
**Fig. S1.** (a) The calibration curve constructed using the ratio of integrated FTIR intensities in the >C=O stretching region of PMAA<sub>150</sub> (sum of 1700 and 1730 cm<sup>-1</sup> bands) to that of -C-O-C- stretching vibrations of F127 (sum of 1070 and 1104 cm<sup>-1</sup> bands) measured in the polymer mixtures with known compositions. (b) FTIR spectra of PMAA<sub>150</sub>/F127 complexes precipitated from solutions at various mass ratios.



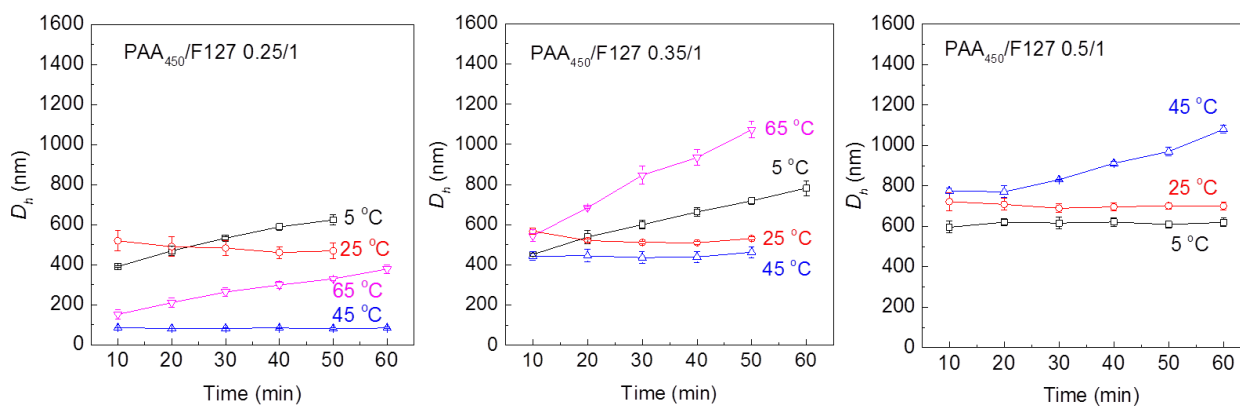
**Fig. S2.** (a) Hydrodynamic diameters of PMAA<sub>80</sub>/F127 complexes with different ratios of components as a function of temperature. (b) The phase diagram of PMAA<sub>80</sub>/F127 complexes in solutions at pH 2. Concentration of F127 was 0.5 wt%.



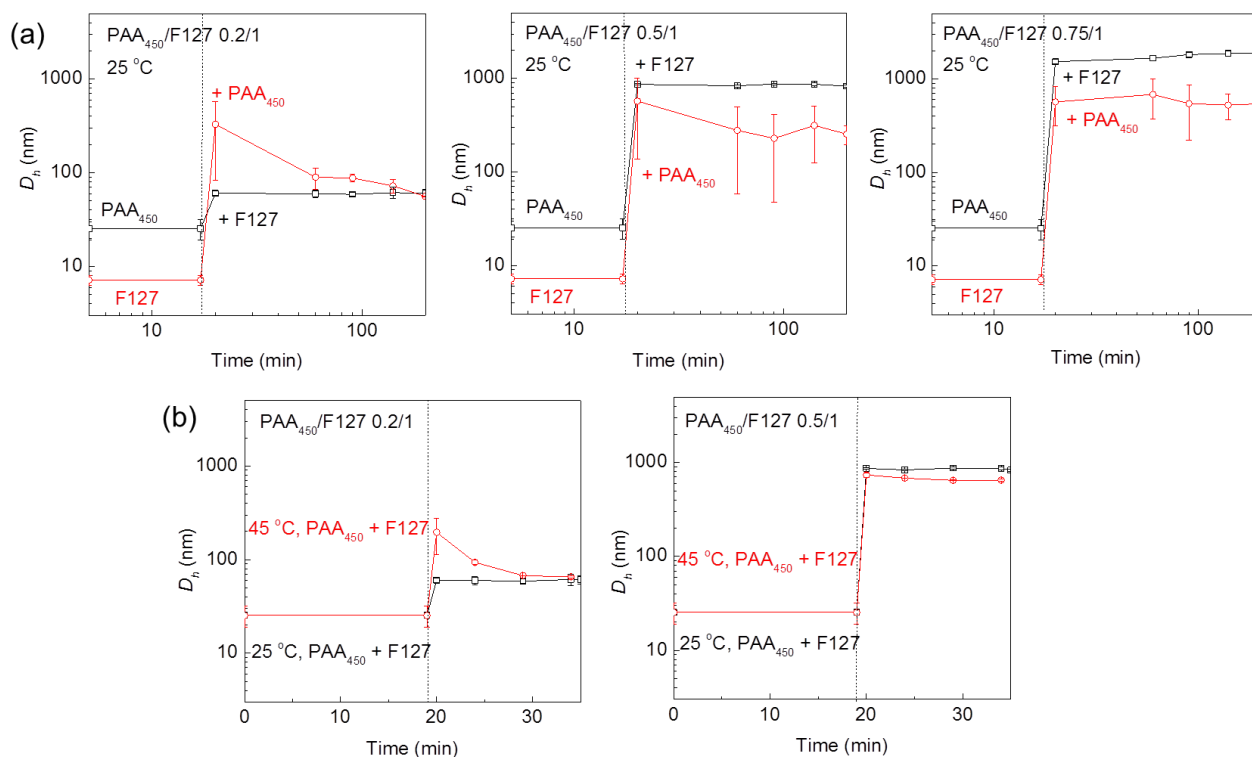
**Fig. S3.** DLS measurements in PMAA<sub>150</sub>/F127 solutions of various compositions prepared using different mixing paths at 25  $^{\circ}\text{C}$  (a-d), or using the same mixing path, but different temperatures (e,f). The blue dotted line indicates the cutoff in the PEC sizes above which extensive PEC precipitation occurred.



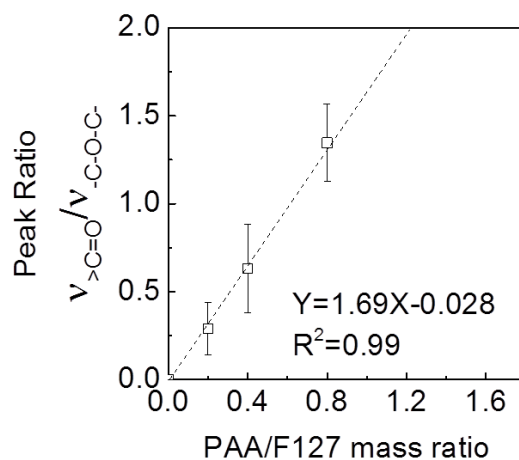
**Fig. S4.** (a) Reversibility and hysteresis in hydrodynamic sizes measured in PAA<sub>450</sub>/F127 0.25/1 solutions upon sequential heating and cooling using 10-min equilibration at each temperature. (b) Response of hydrodynamic diameters of PAA<sub>450</sub>/F127 0.25/1 complexes to temperature variations. The insets are images of the PEC solution exposed to different temperatures.



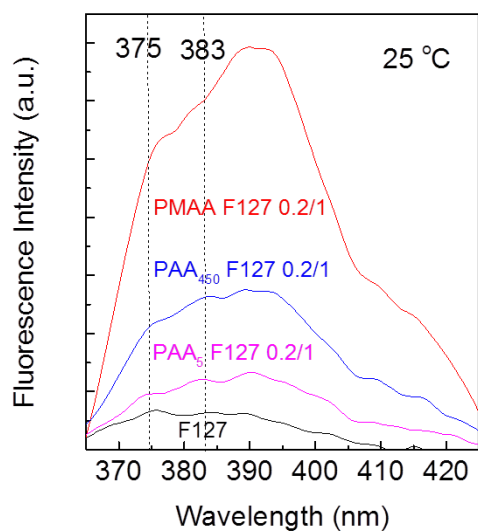
**Fig. S5.** Time evolution of hydrodynamic diameters of PAA<sub>450</sub>/F127 complexes of various compositions at different temperatures.



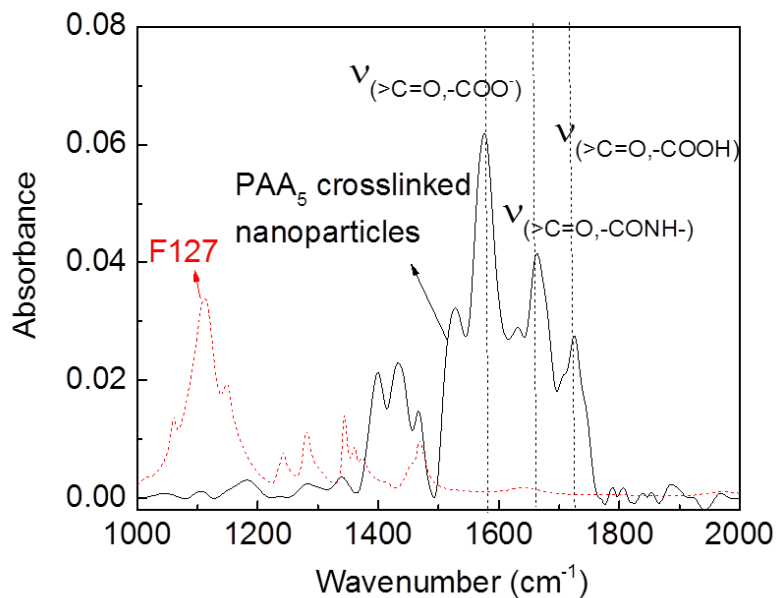
**Fig. S6.** Hydrodynamic diameters of PAA<sub>450</sub>/F127 complexes prepared using different mixing paths at 25 °C (a), or using the same mixing path at different temperatures (b).



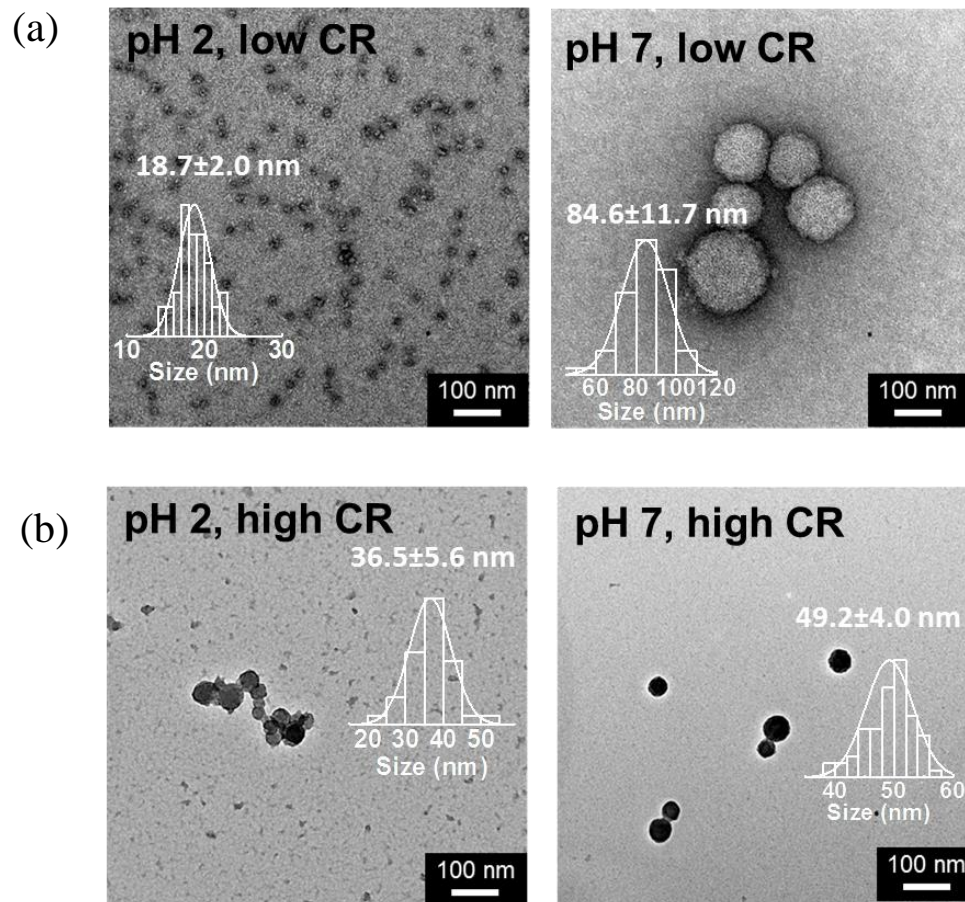
**Fig. S7.** Calibration curve constructed using PAA<sub>450</sub>/F127 polymer mixtures with known mass ratios. The y axis shows the ratio of integrated intensities of absorption bands in the 1700 -1730 cm<sup>-1</sup> region to those in the 1000 -1150 cm<sup>-1</sup> region as determined by the curve fitting procedure shown in Fig. 5.



**Fig. S8.** Fluorescence spectra of pyrene obtained at the excitation wavelength of 332 nm with PMAA<sub>150</sub>/F127, PAA<sub>450</sub>/F127, PAA<sub>5</sub>/F127 and F127 solutions at pH 2. Concentration of F127 in all solutions was 0.5 wt%.



**Fig. S9.** FTIR spectra of F127 (red) and PAA<sub>5</sub> nanoparticles, achieved by crosslinking PAA<sub>5</sub>/F127 0.75/1 complexes in the solution and removing F127 by dialysis at pH 7 (black).



**Fig. S10.** TEM images of PAA<sub>5</sub> nanoparticles with (a) low and (b) high density of crosslinks (CR) prepared from solutions at pH 2 (left) and pH 7 (right). The histograms of the particle diameters were calculated by analyzing ~ 50 particles in the TEM images.