Electronic Supplementary Information

Preparation and self-assembly of ionic (PNIPAM-*co*-VIM) microgels and their adsorption property for phosphate ions

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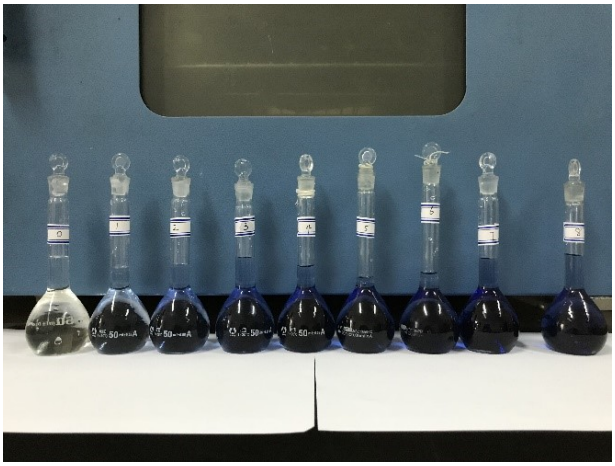

Fig. S1. Visual appearance of blank solution and phosphomolybdate blue solutions prepared by eight groups of phosphate solutions with different concentrations.

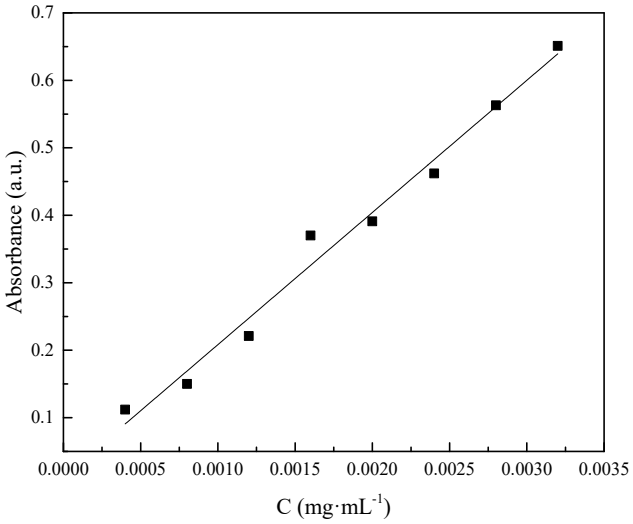

Fig. S2. The standard work curve of phosphate anion solutions and linear fitting of experimental data.

The standard work curve is established, as shown in Fig. S2, after having carried out the procedure of standard work curve. The linear equation is: y = 195.89286x + 0.01239, where x is the concentration of phosphate (mg L^{-1}) and the linear scope of phosphate concentration is 0.4-3.2 mg L^{-1}, and *y* is the absorbance. The linear correlation coefficient *R* is 0.98, that means that this linear equation has a better linear correlation and can satisfy the photometric measurement of phosphate.

Table S1. The composition, weight-average molecular weights (M_w), and polydispersity indexes (PDI) of P(NIPAM-co-VIM) copolymers with different VIM mass fractions of 11%, 30%, 50%, and 70%.

Sample No.	Feed ratio of NIPAM/VIM		Real ratio of NIPAM/VIM from NMR	M_W by GPC	PDI by GPC
	wt/wt	mol/mol	mol/mol		
P(NIPAM-co-VIM)-11%	1/0.11	1/0.14	1/0.12	6.14×10^4	1.99
P(NIPAM-co-VIM)-30%	1/0.30	1/0.38	1/0.33	5.95×10^4	2.01
P(NIPAM-co-VIM)-50%	1/0.5	1/0.63	1/0.55	5.63×10^4	2.12
P(NIPAM-co-VIM)-70%	1/0.7	1/0.89	1/0.82	4.92×10^4	2.23

The molecular weight and molecular weight distribution of the linear copolymer were determined by Water 150C gel permeation chromatography (GPC), the liquid phase was N, N-dimethylformamide, and the sample concentration was 0.3 wt%. ^{1}H NMR spectroscopy was determined using a 400 MHz Varian Mercury Plus NMR spectrometer using heavy water or deuterated chloroform as a solvent, and the solution concentration was approximately 10 mg/mL.

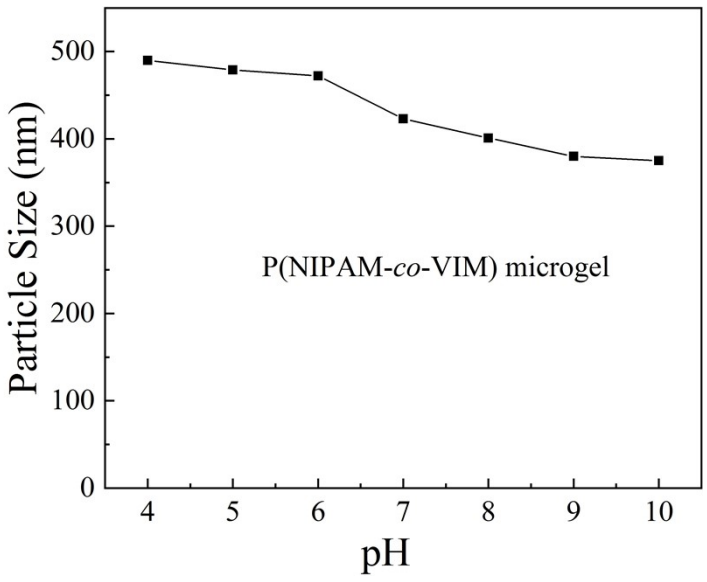

Fig. S3. The particle size of the final swelling P(NIPAM-*co*-VIM) microgels as a function of pH.