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

Supporting Information

Acid Degradable Poly(vinylcaprolactam)-based Nanogel with Ketal Linkage for Drug Delivery

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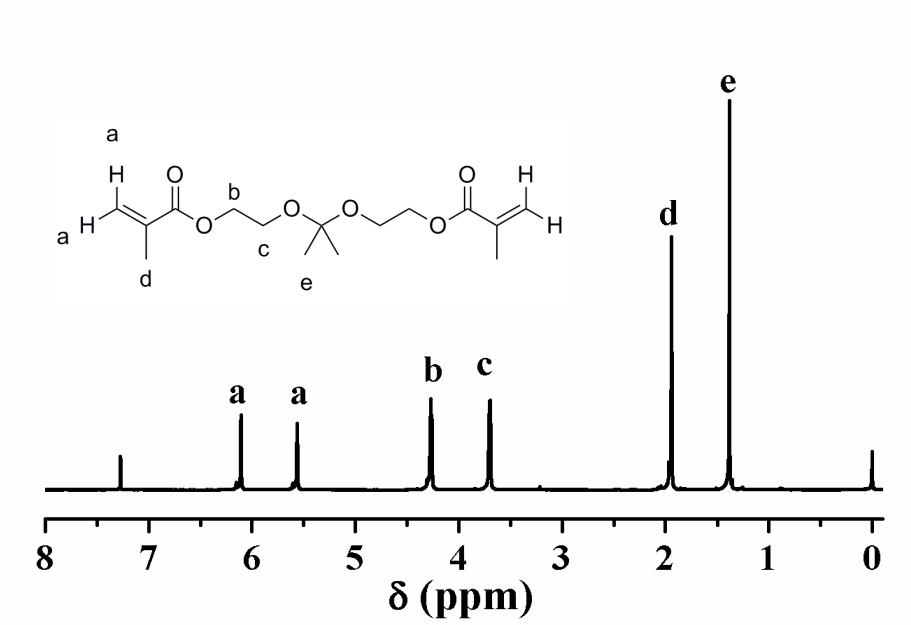

Fig. S1 ^{1}H NMR spectrum of DMAEP. ^{1}H NMR (500 MHz, CDCl3): δ (ppm) 1.38 (6H, s, $(COOCH_2CH_2O)_2C(CH_3)_2$), 1.94 (6H, s, $(OCOCCH_3CH_2)_2$), 3.70 (4H, m, $(COOCH_2CH_2O)_2C(CH_3)_2$), 4.27 (4H, m, $(COOCH_2CH_2O)_2C(CH_3)_2$), 5.57 (2H, s, $(OCOCCH_3CH_2)_2$ – syn to methyl), 6.11 (2H, s, $(OCOCCH_3CH_2)_2$ − anti to methyl).

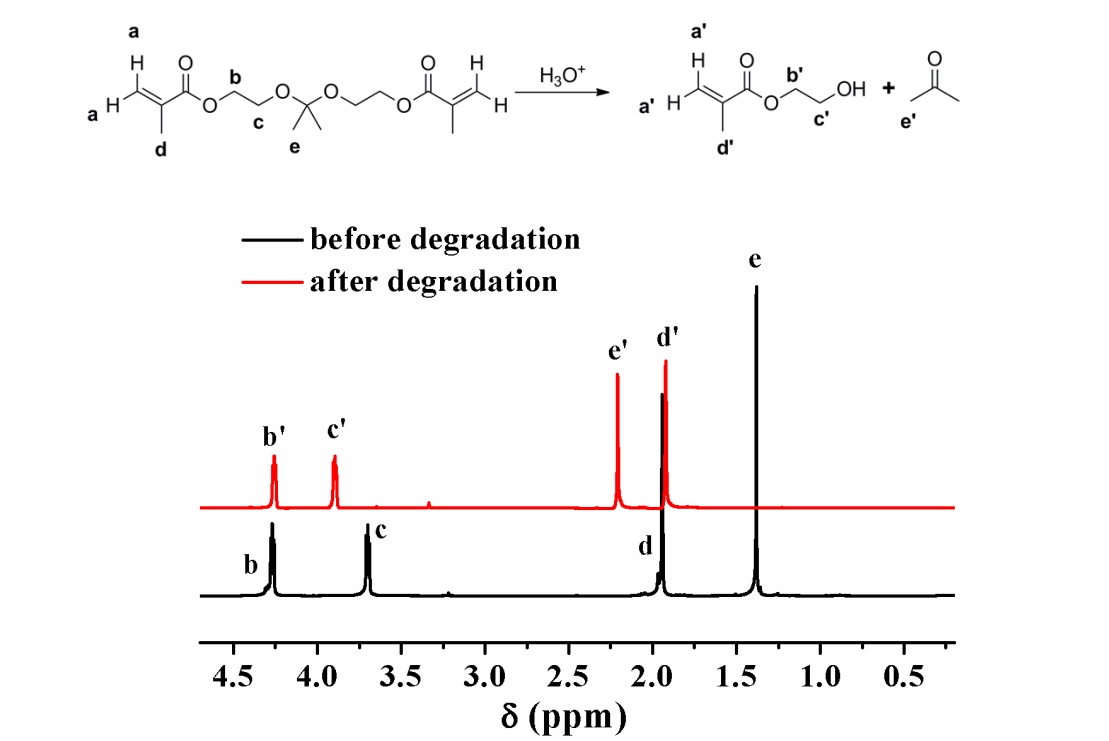

Fig. S2 ^{1}H NMR spectra of cross-linker DMAEP before and after degradation.

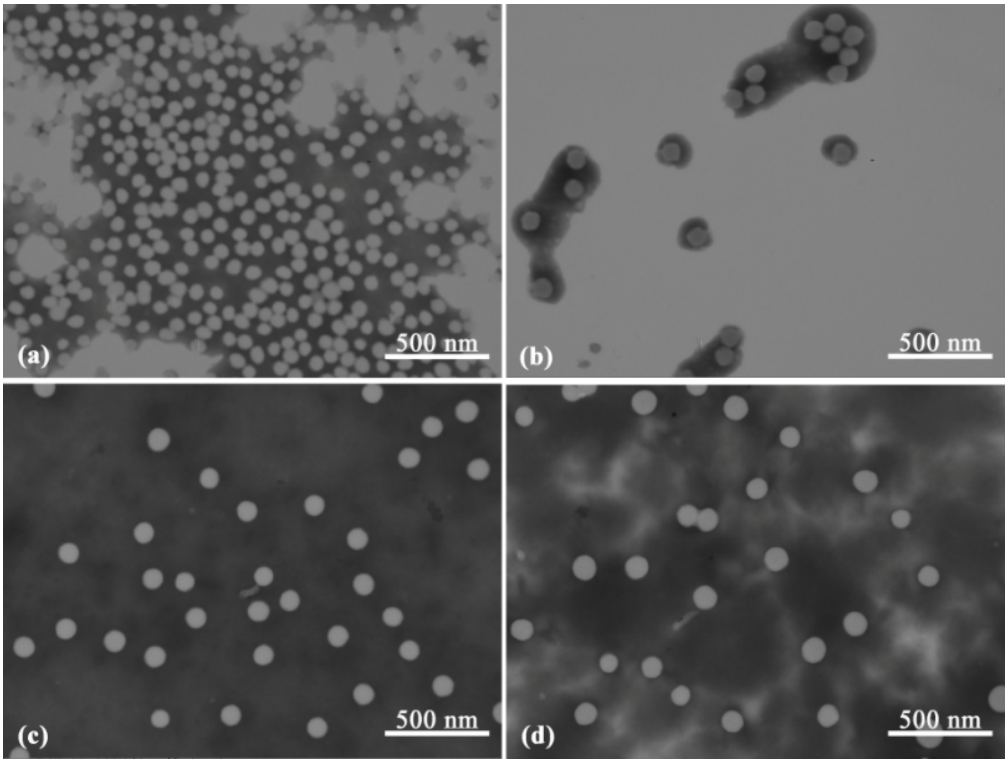

Fig. S3 Representative TEM images (×5W) of P(VCL-*ketal*-HPMA) nanogels with different HPMA contents: (a) 3 wt%, (b) 5 wt%, (c) 8 wt% and (d) 10 wt%.

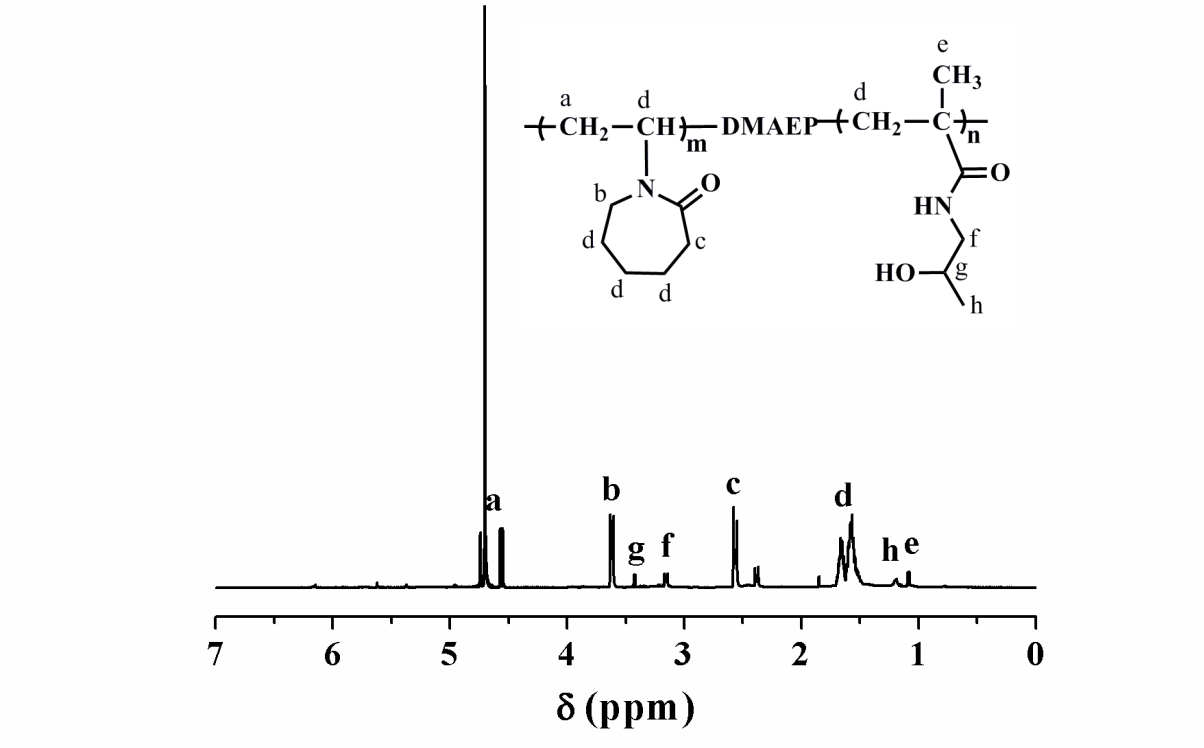

Fig. S4 ^{1}H NMR spectrum of P(VCL-*ketal*-HPMA) nanogel in D_2O.

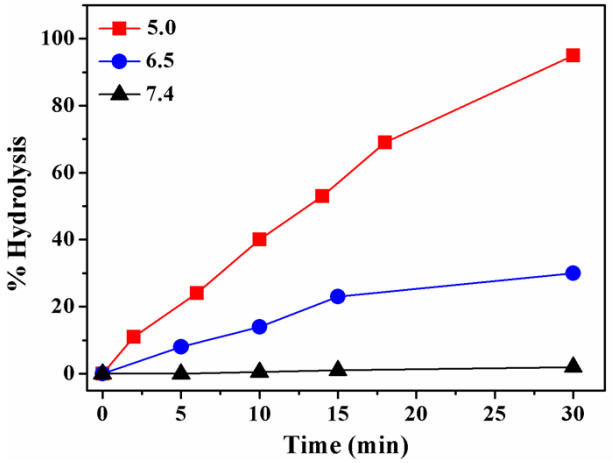

Fig. S5 Hydrolysis kinetics of acid-cleavable cross-linker DMAEP at pH 5.0, 6.5 and 7.4, respectively.

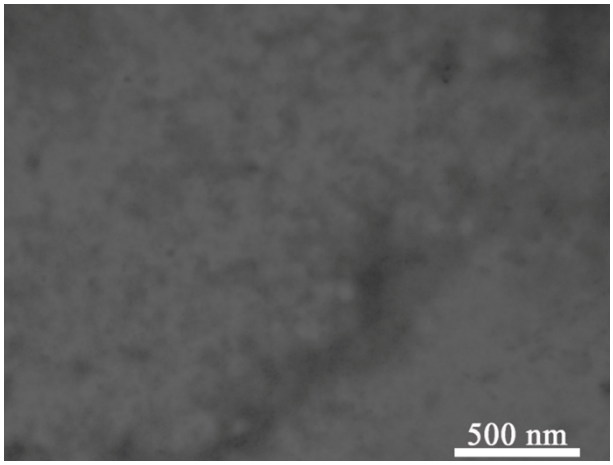

Fig. S6 TEM image of P(VCL-*ketal*-HPMA-8) nanogels after degradation.

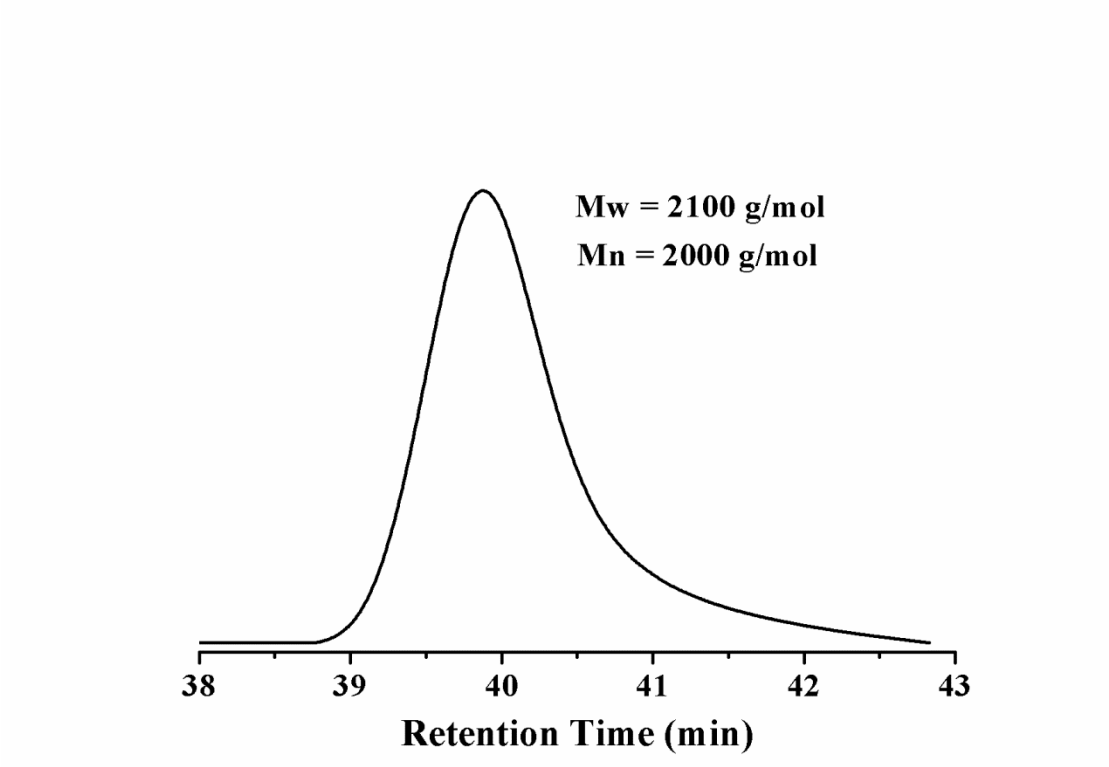

Fig. S7 The molecular weight of copolymer P(VCL-*co*-HPMA) by GPC measurement.

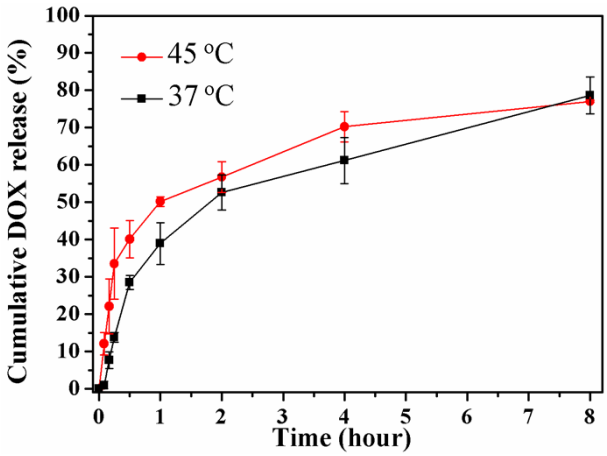

Fig. S8 DOX release profiles of acid-degradable P(VCL-*ketal*-HPMA) nanogel in the medium of pH 5.0 at 37 °C and 45 °C .

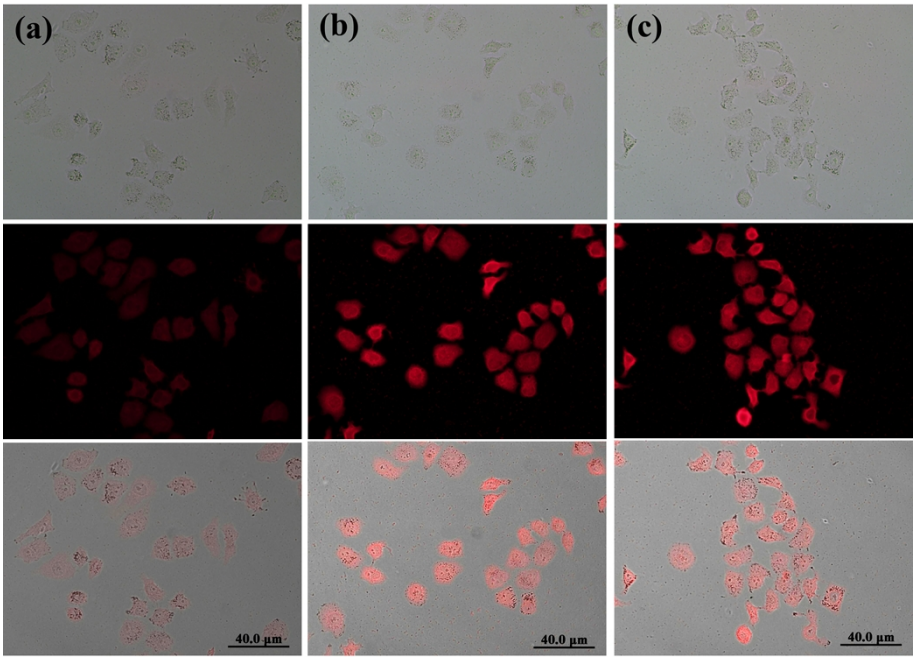

Fig. S9 CLSM images of the intracellular DOX release of free DOX. (a) 2 h, (b) 6 h and (c) 12 h incubation of free DOX. In each column, images from top to down: differential interference contrast microscopy, fluorescence microscopy, and overlays of both images.

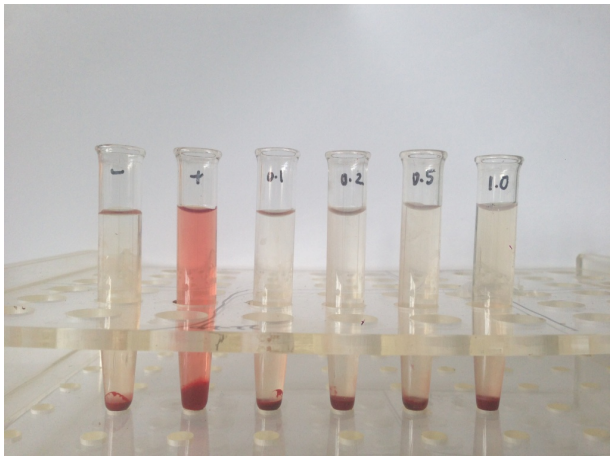

Fig. S10 Hemolysis assay of the P(VCL-*ketal*-HPMA-8) nanogel. RBC suspension to make the final particle concentration 0.1, 0.2, 0.5 and 1 mg/mL, respectively. Distilled water served as positive control and normal saline as negative control.