Electronic Supplementary Material (ESI) for Soft Matter.

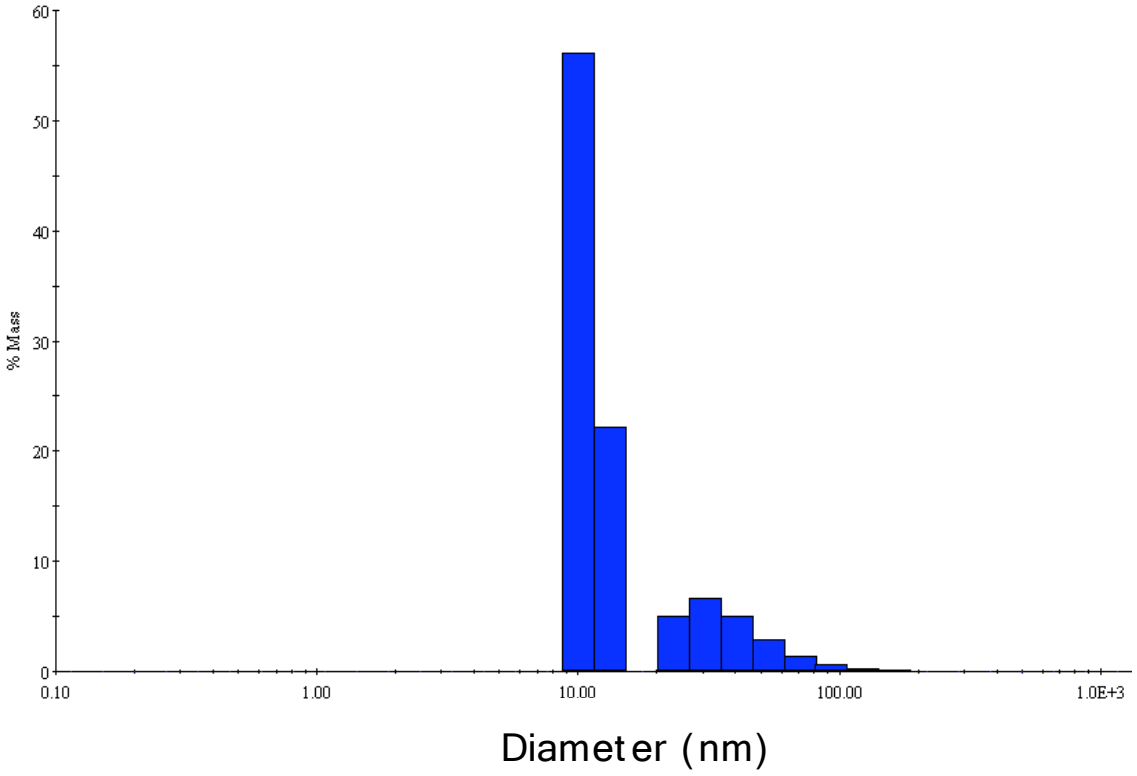

Figure S1. Diameter of EHEMA-PEG550DMA as determined by DLS in water.

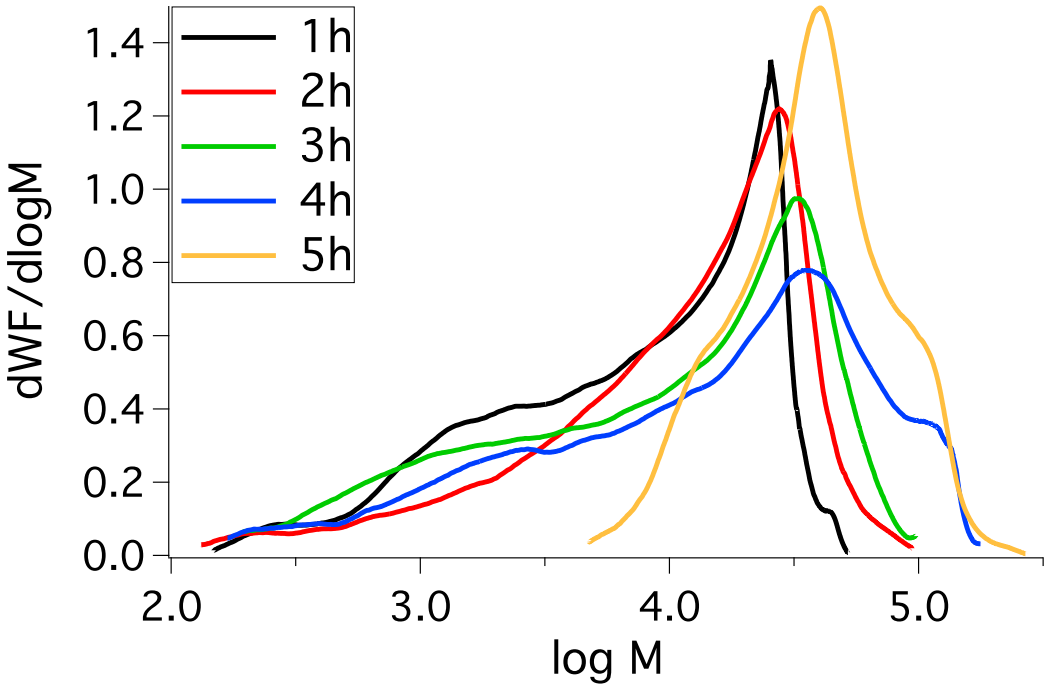

Figure S2. GPC analysis of EHEMA-TTEGDMA nanogel formation as a function of time. The reaction solution was sampled hourly and dialyzed against a 2000 MWCO membrane for 48 h.

Table S1. Number-average molecular weight (M_n), polydispersity index (PDI), hydrodynamic radius (R_h), and Mark-Houwink alpha parameter (MH-α) for EHEMA10-TTEGDMA sampled at hourly timepoints.

Time (h)	**Conversion (%)**	**M_n (g/mol)**	**PDI**	**R_h (nm)**	**MH-α**
1	47	2600	4.6	2.8	0.28
2	67	3300	5.2	3.4	0.31
3	72	2700	6.9	3.3	0.33
4	83	3200	9.3	4.0	0.37
5	85	28000	1.7	5.3	0.35

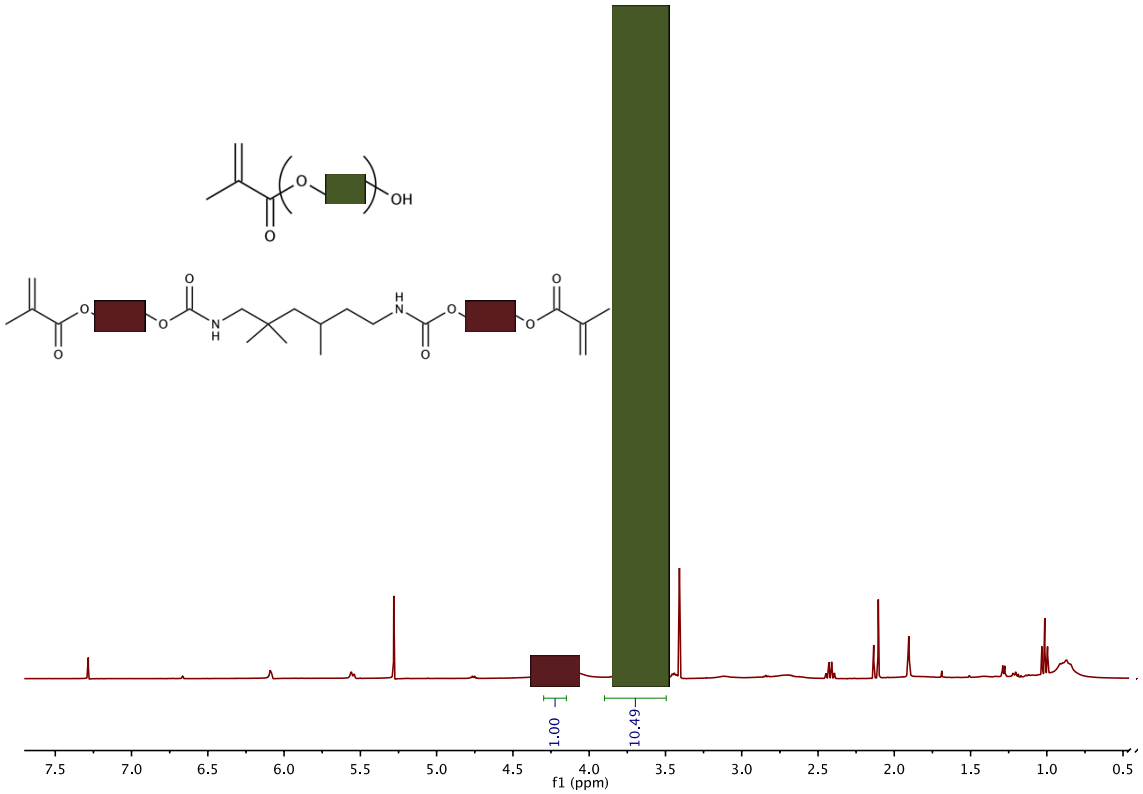

Figure S3: ^{1}H NMR spectrum of EHEMA-UDMA nanogel in $CDCl_3$

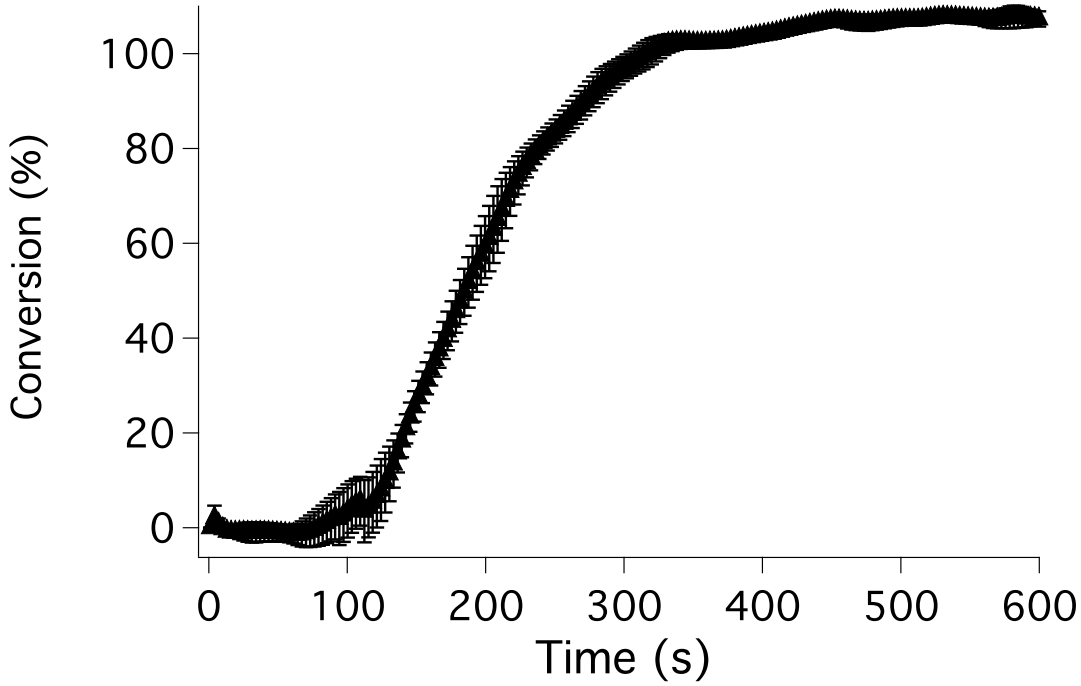

Figure S4: Fractional methacrylate conversion vs. time for a 50 wt% solution of EHEMA-TTEGDMA nanogel in water irradiated at 10 mW/cm^2. The sample was continuously exposed to light starting at 30 seconds.

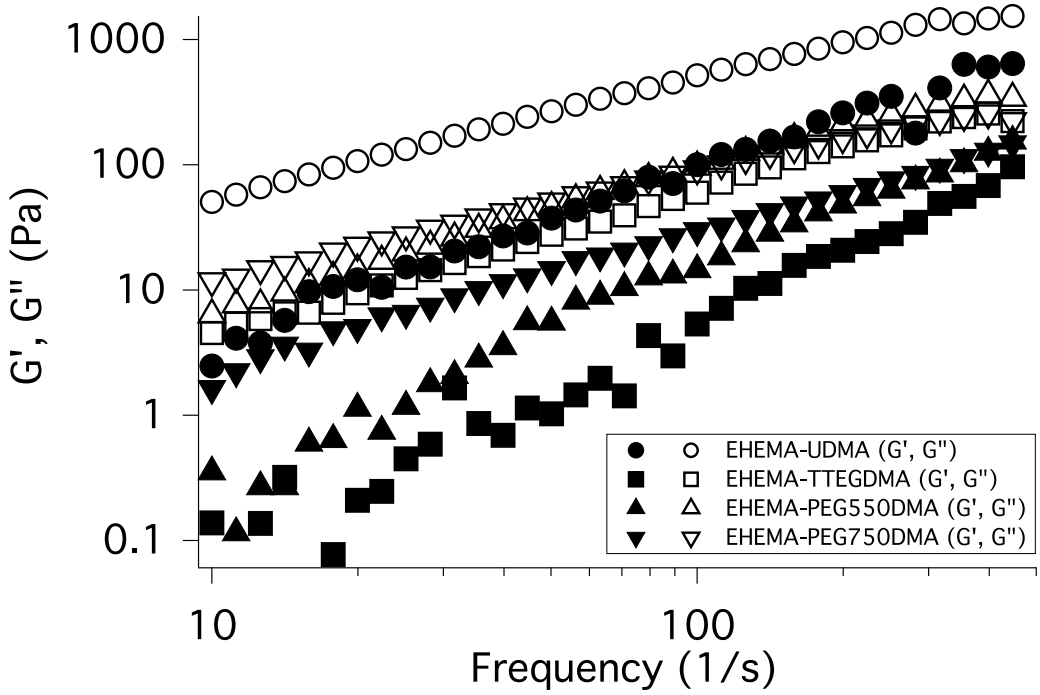

Figure S5. Frequency sweeps of 50 wt% dispersions of nanogels with varying chemical composition.

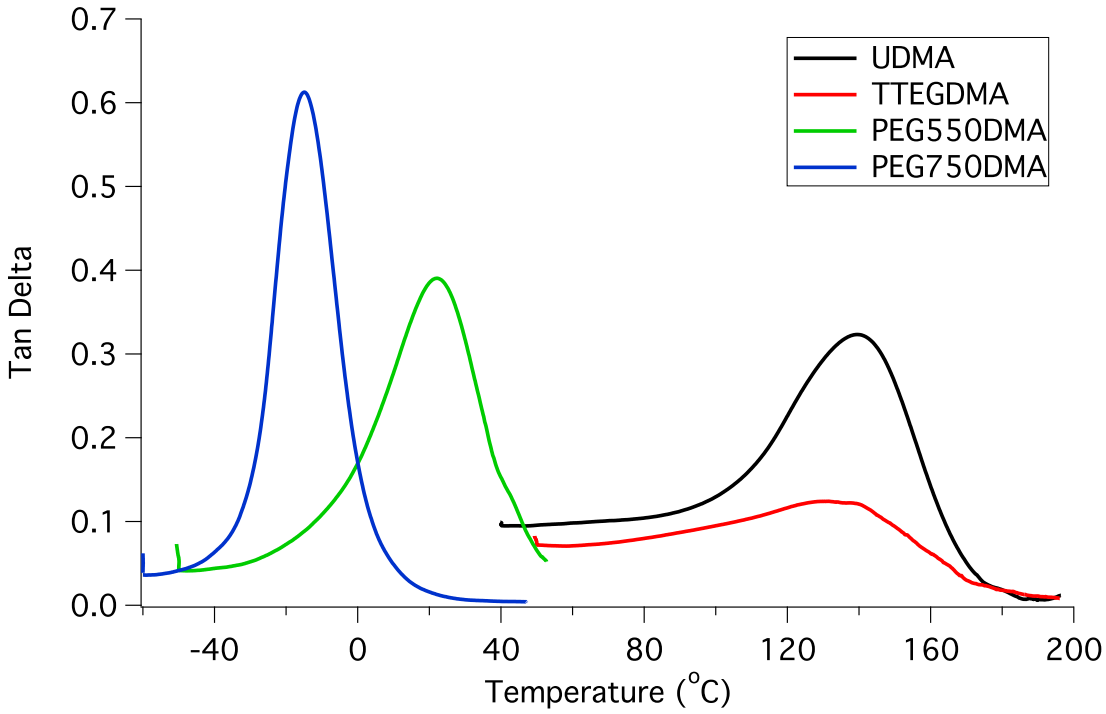

Figure S6: Glass transitions of UDMA, TTEGDMA, PEG550DMA, and PEG750DMA homopolymers.