

SUPPLEMENTARY INFORMATION

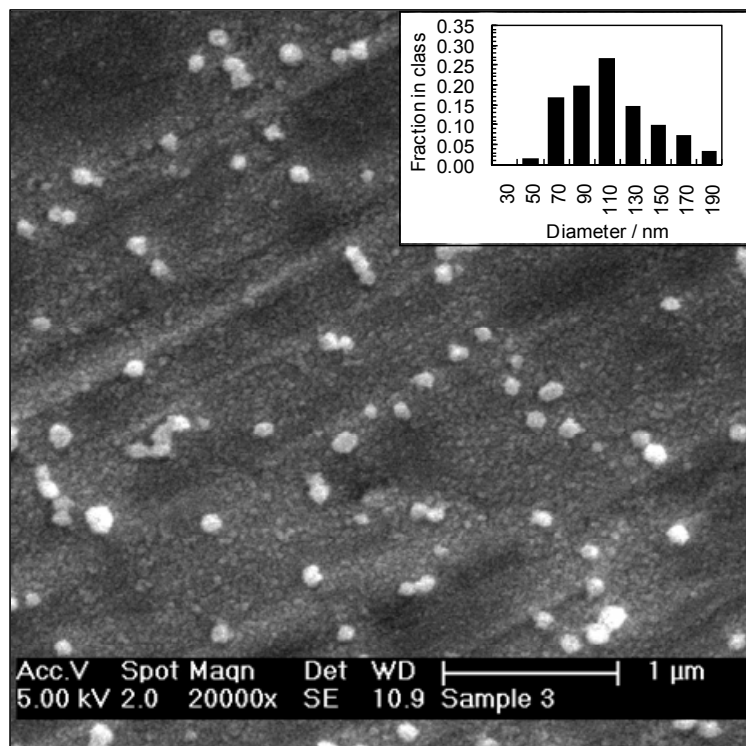


Fig. S1. SEM micrograph and the particle size distribution for the poly(EA/MAA/BDD) MG particles.

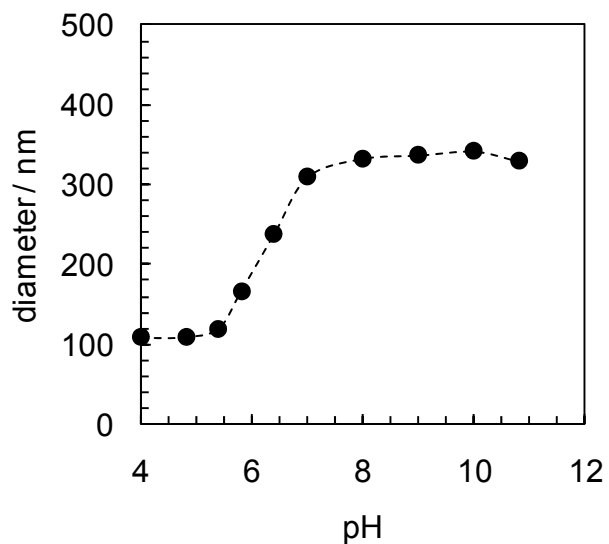


Fig. S2 Hydrodynamic diameters as a function of pH for poly(EA/MAA/BDD) MG particles.

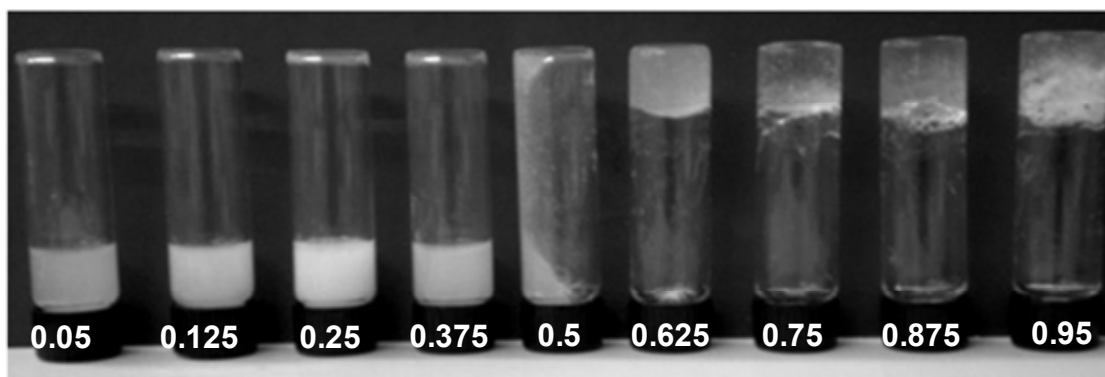


Fig. S3. Digital photographs of inverted tubes containing MG / PEGD550 dispersions. The dispersions had different volume fractions of MGs ($\Phi_{MG(Tot)}$, shown). Note that $\phi_{Tot} = 0.20$ and $pH = 7.4$.

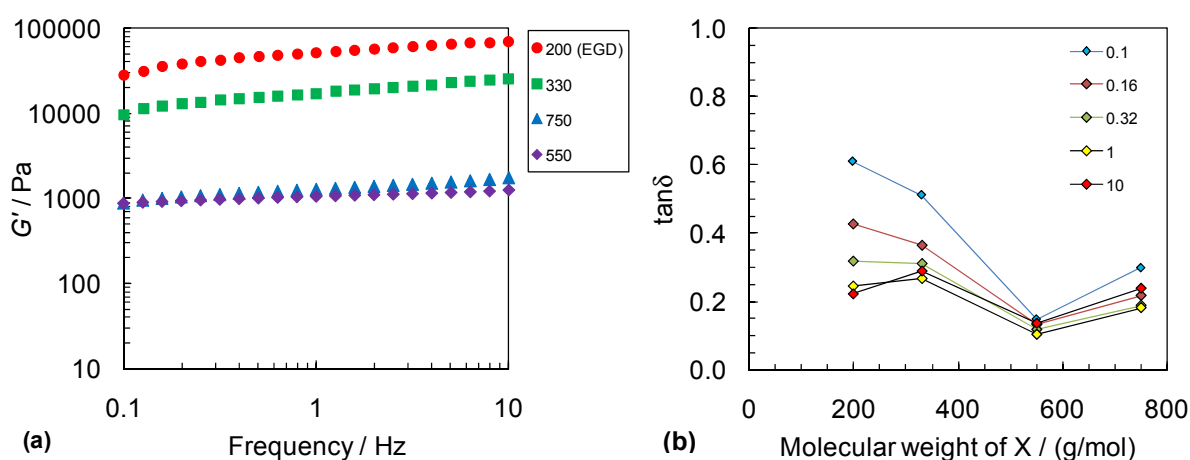


Fig. S4. Frequency sweep data for MG / H-X hydrogel composites. (a) Shows the variation of G' with frequency and (b) shows $\tan\delta$ values obtained at specific frequencies plotted as a function of the molecular weight of crosslinker (X). For each of these dispersions dispersions $\phi_{Tot} = 0.20$ and $\Phi_{MG(Tot)} = 0.50$. The molecular weight of X is shown in the legend of (a). The frequencies (Hz) are shown in the legend of (b).

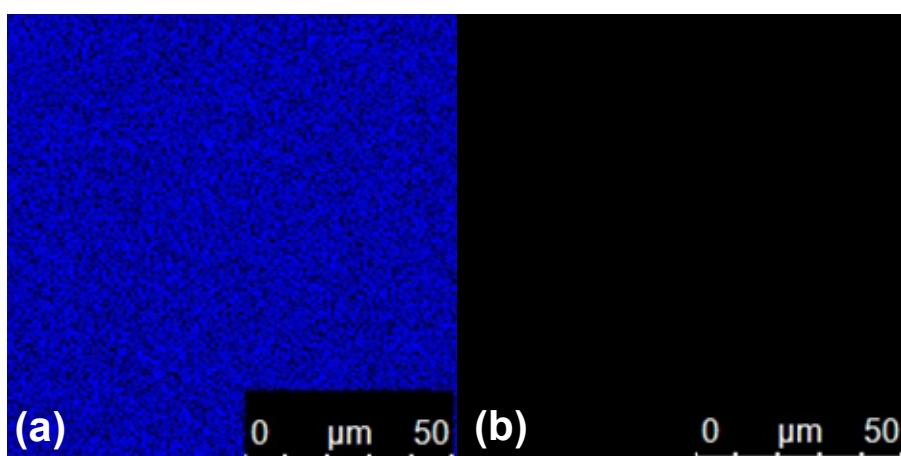


Fig. S5. Fluorescence microscopy images for concentrated dispersions ($\phi_{Tot} = 0.20$ and $\Phi_{MG(Tot)} = 1.0$) of (a) labelled MG-pyr and (b) unlabelled MG dispersions. These dispersions were physical gels ($pH = 7.4$).

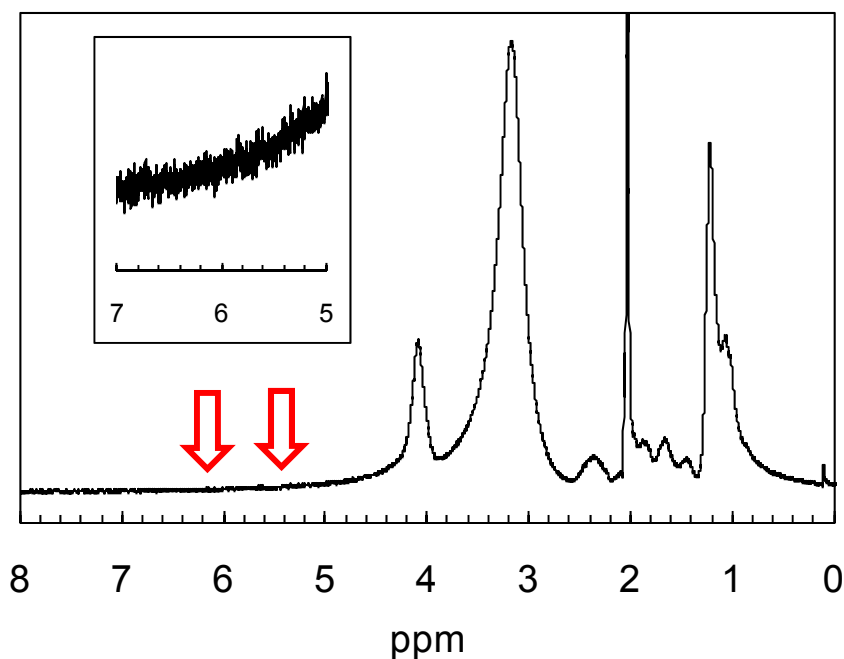


Fig. S6. ^1H NMR spectrum of poly(EA/MAA/BDD) MG measured in acetone- d_6 . The arrows show the region where vinyl group signals are expected, if present. The inset shows an expanded view of this chemical shift region. The peak at a chemical shift of 2.0 is from acetone.

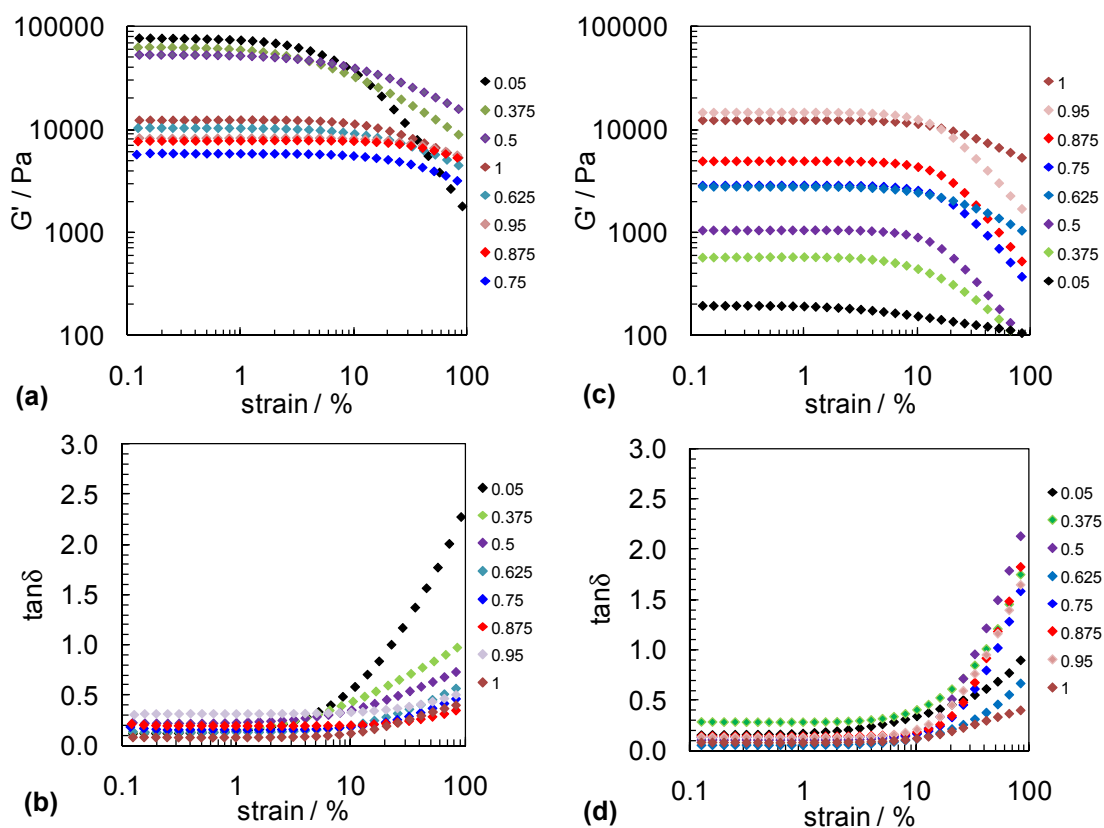


Fig. S7. Effect of variation of $\Phi_{MG(Tot)}$ Strain sweep data for MG / H-EGD ((a) and (b)) and MG / H-PEGD550 ((c) and (d)) hydrogel composites measured at different $\Phi_{MG(Tot)}$ values (See legends). All systems were measured at pH 7.4. For these experiments $\phi_{Tot} = 0.20$.

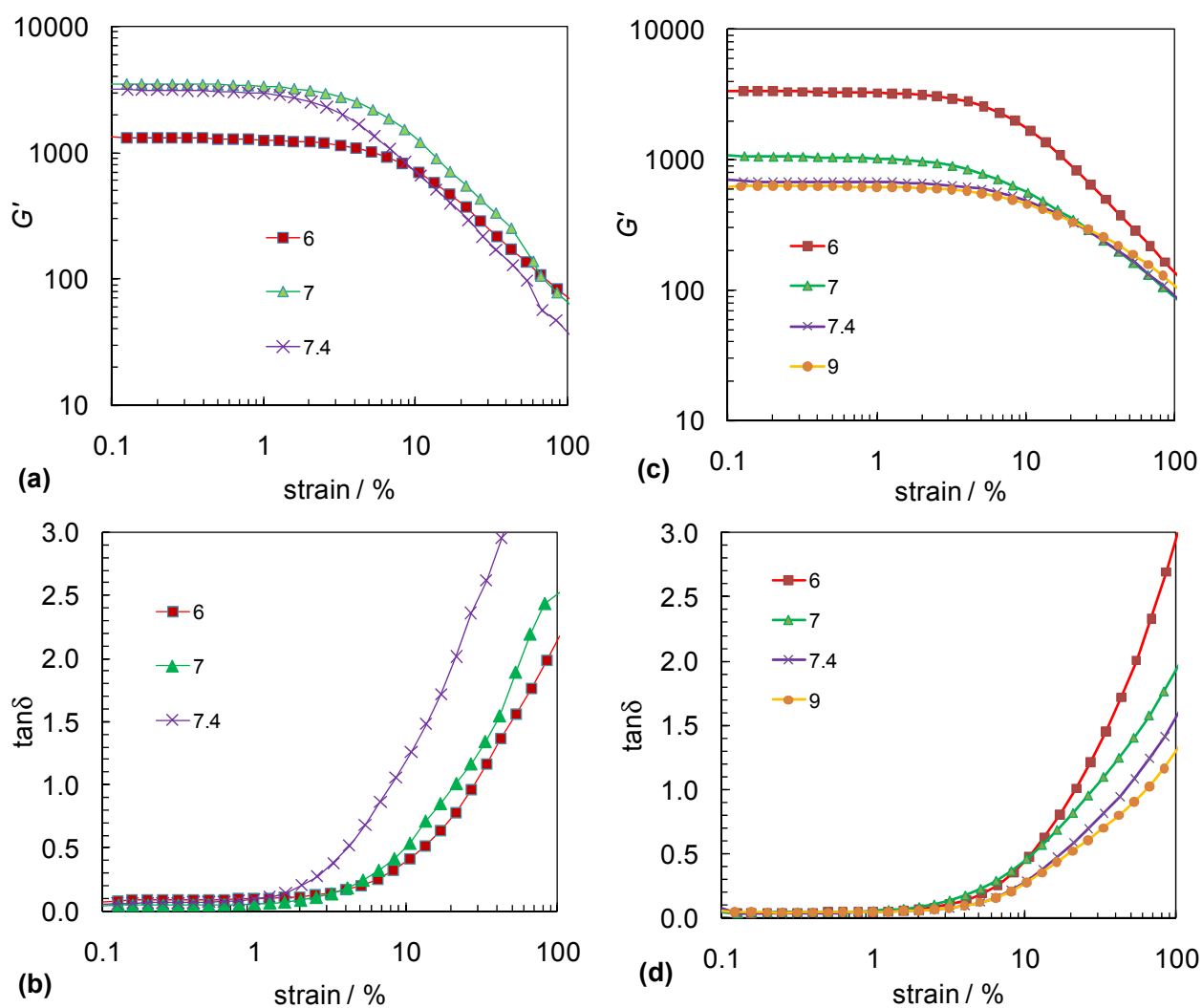


Fig. S8 Strain sweep dynamic rheology data for hydrogel composites at different pH values. Variation of G' and $\tan\delta$ with strain for MG / H-PEGD ((a) and (b)) and MG / H-PEGD550 ((c) and (d)) measured at a range of pH values (legends). The hydrogel composites were prepared $\Phi_{MG(Tot)} = 0.5$ and $\phi_{Tot} = 0.20$ at pH = 7.4. They were allowed to swell in buffer solutions for 7 days before the measurements were obtained.