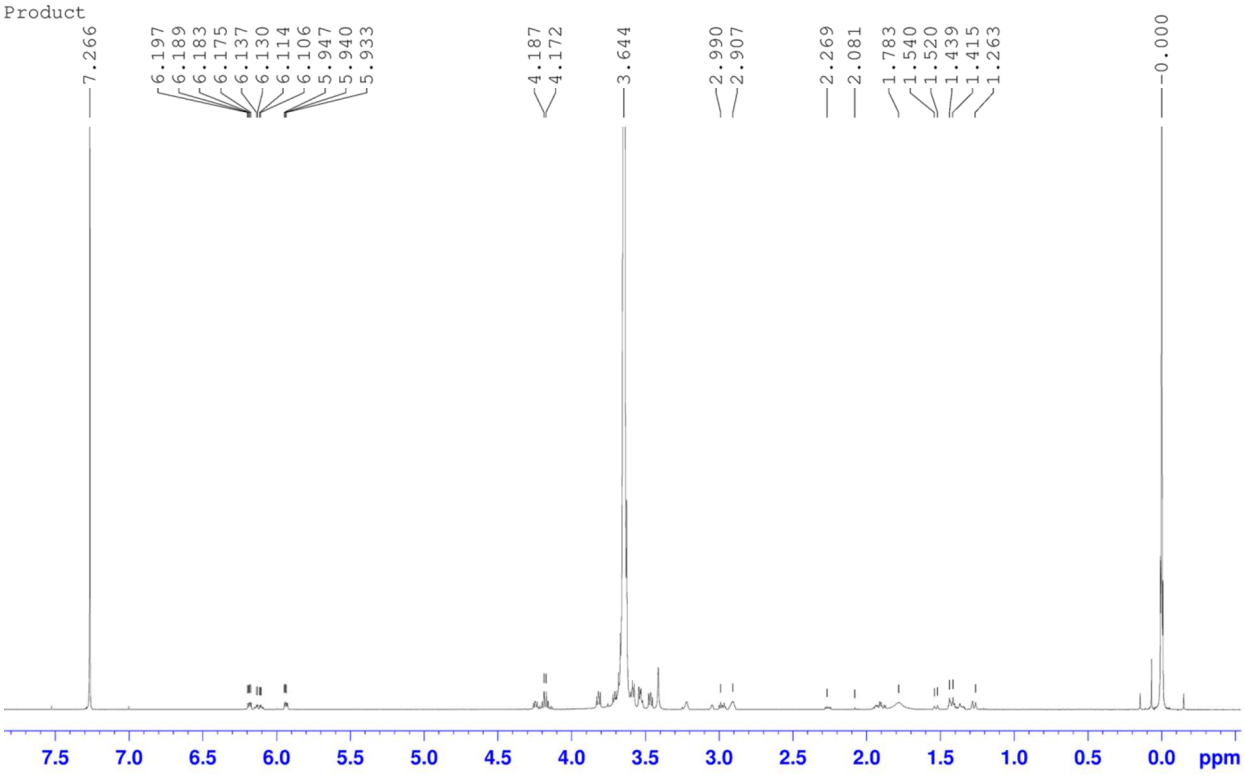
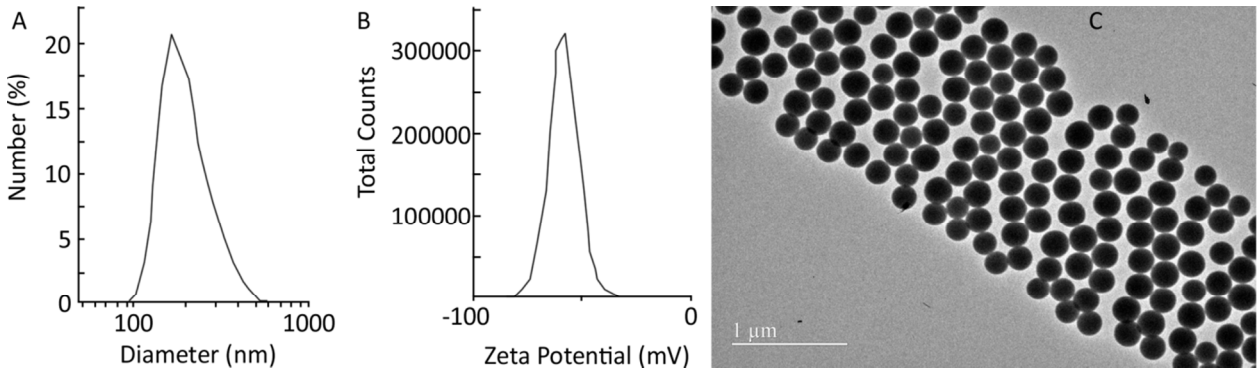
Enzyme Induced Degradation Stiffening of Hydrogels with Structural Color

Omar B. Ayyub , and Peter Kofinas

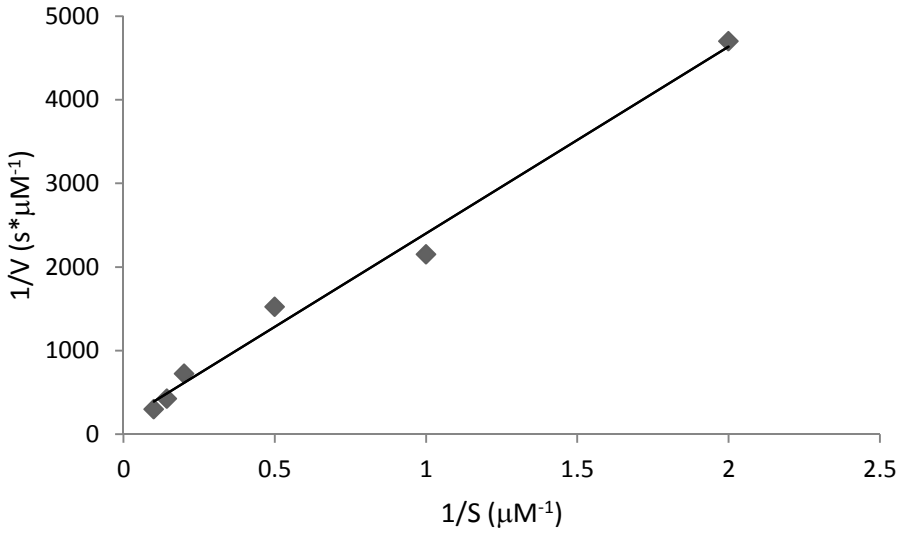
Fischell Department of Bioengineering, University of Maryland, College Park, MD 20742



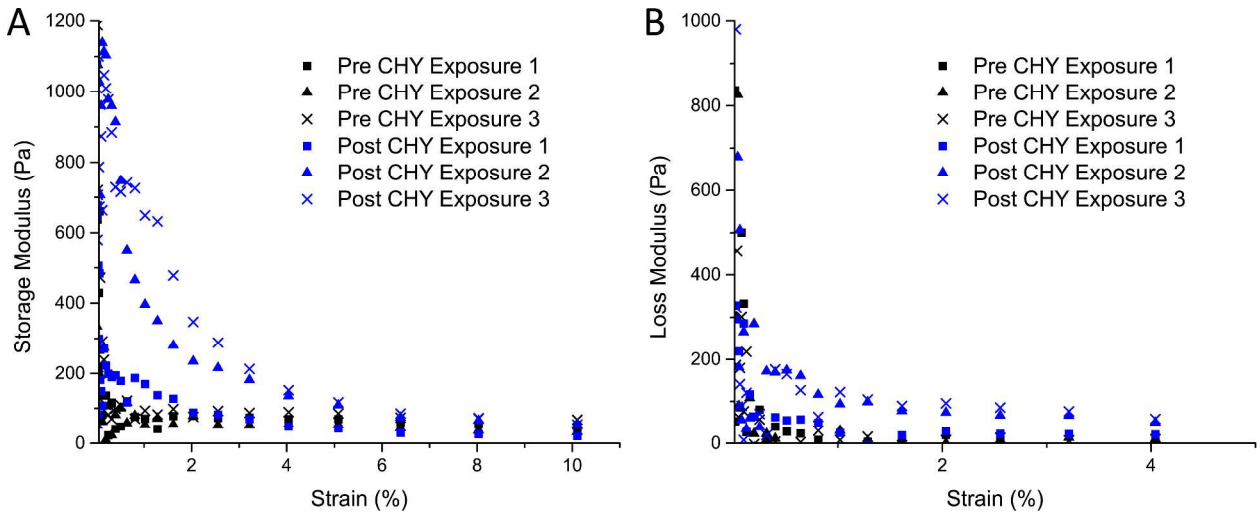
Supplementary Figure 1 – Nuclear magnetic resonance of the PEG4NB. The PEG backbone is the large series of shifts at 3.644 ppm. The shift at 4.18 is the newly formed ester bond between PEG and norbornene. Note that there is no presence of the shift associated with the terminal hydroxyl group of PEG.



Supplementary Figure 2 – (a) The silica NPs had an average diameter of 246 nm and a dispersity of 10%. (b) After sulfonation the particles carried a zeta potential of -58 mV, indicating that they will form a stable colloid. (c) Transmission electron microscopy of the silica NPs.



Supplementary Figure 3 – Lineweaver burke plot of chymotrypsin cleaving the CYKC peptide. Velocities were determined utilizing the compound fluorescamine, which binds to N-terminal amines and fluoresces. The N-terminal amines are generated as the CYKC peptide is cleaved.



Supplementary Figure 4: Rheology data of the hydrogel nanocomposite before and after exposure to chymotrypsin. (a) The measured storage modulus of the hydrogels before and after chymotrypsin exposure. As seen an order of magnitude increase in modulus occurs after chymotrypsin exposure. (b) The measured loss modulus of the hydrogels before and after chymotrypsin exposure.