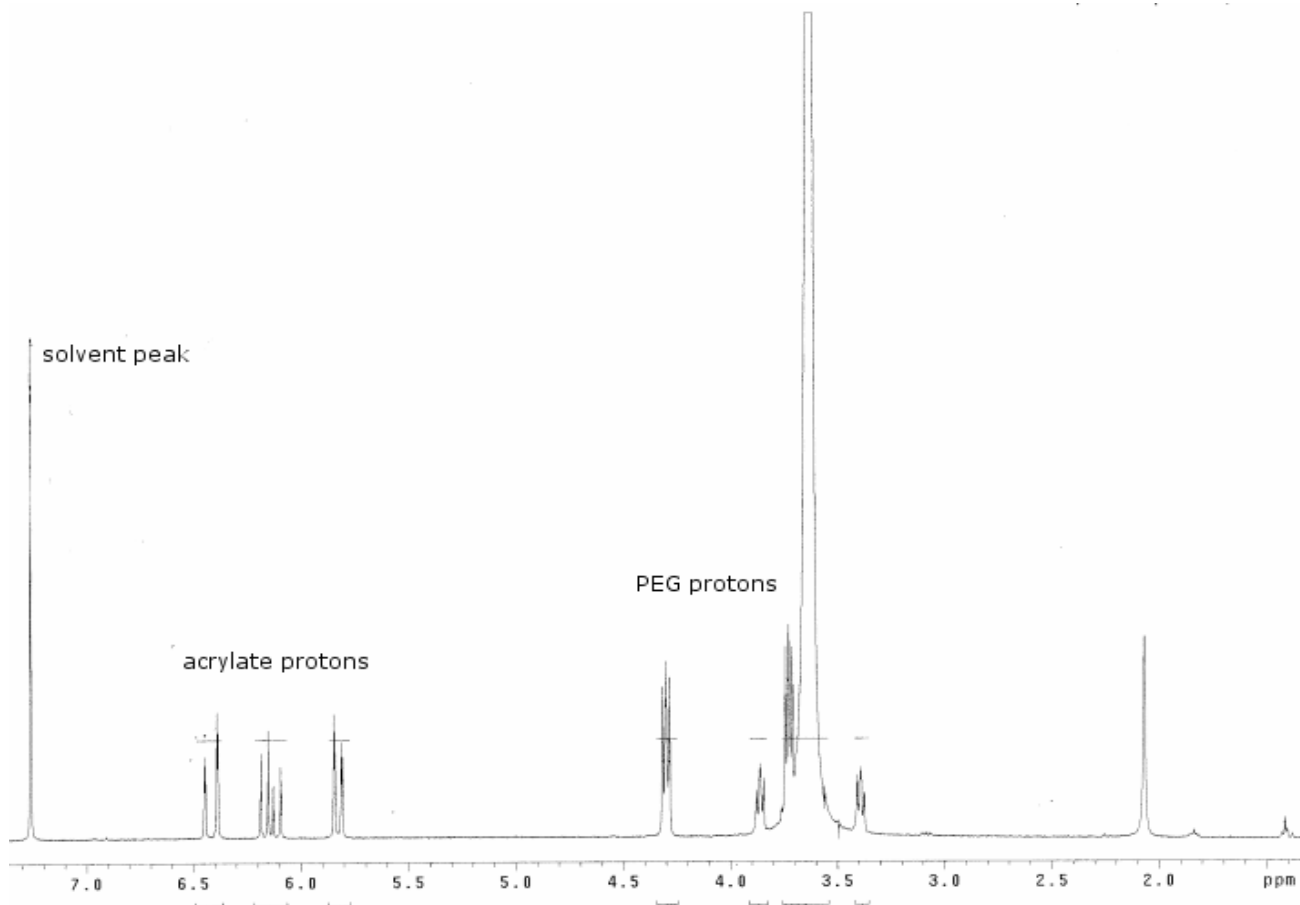
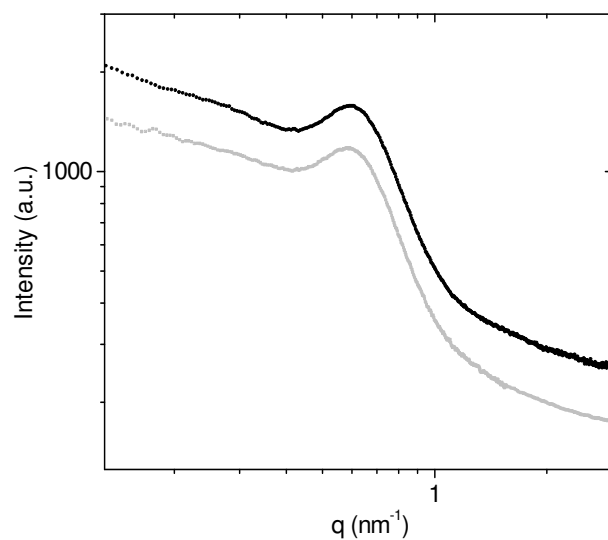


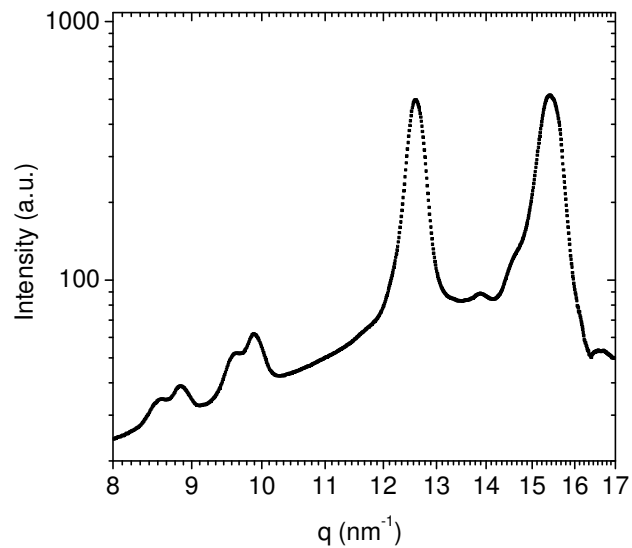
## Supplemental Information



**Figure S01.** Sample NMR trace for PEG-DA(3.4k). Here the ratio of acrylate protons to PEG protons is 326 PEG group protons per two acrylate group protons. The theoretical ratio of PEG protons is 309 PEG protons ( $3400/44 \times 4$ ) to two acrylate group protons. The NMR therefore shows that approximately 94% of the PEG groups are functionalized with acrylate groups.



**Figure S02.** SAXS curves from equilibrium swollen PEG-DA(4.6k)-50% (black) and PEG-DAam(4.6k)-50% (gray). Intensities are offset for clarity.



**Figure S03.** WAXS curves from a dried PEG-DA(8.0k)-50% hydrogel. The sharp diffraction peaks in this  $q$  range indicate molecular level ordering in the semi-crystalline dry PEG networks.