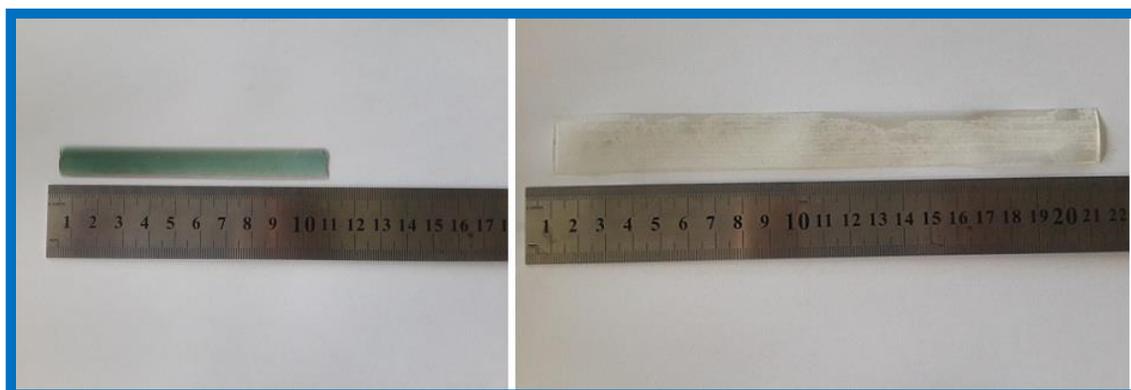
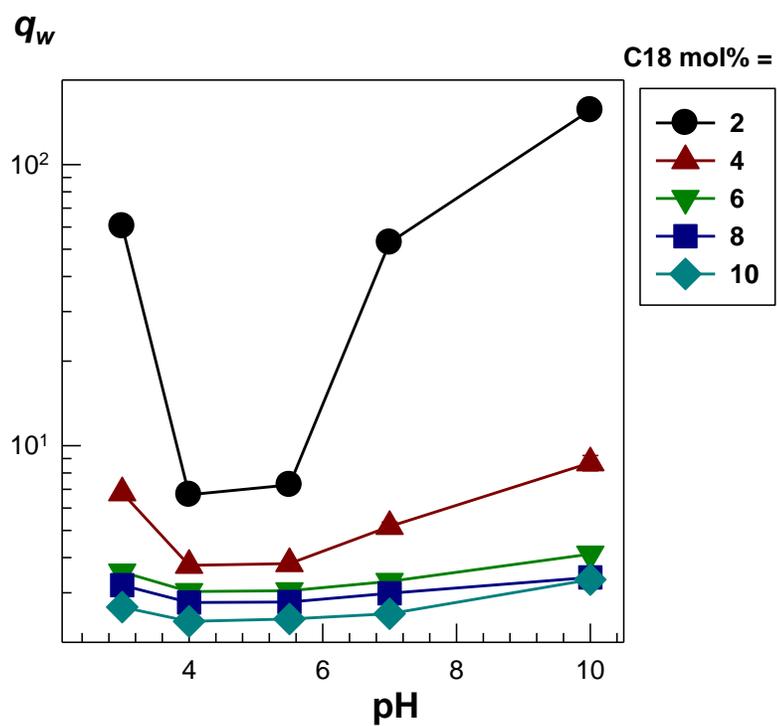


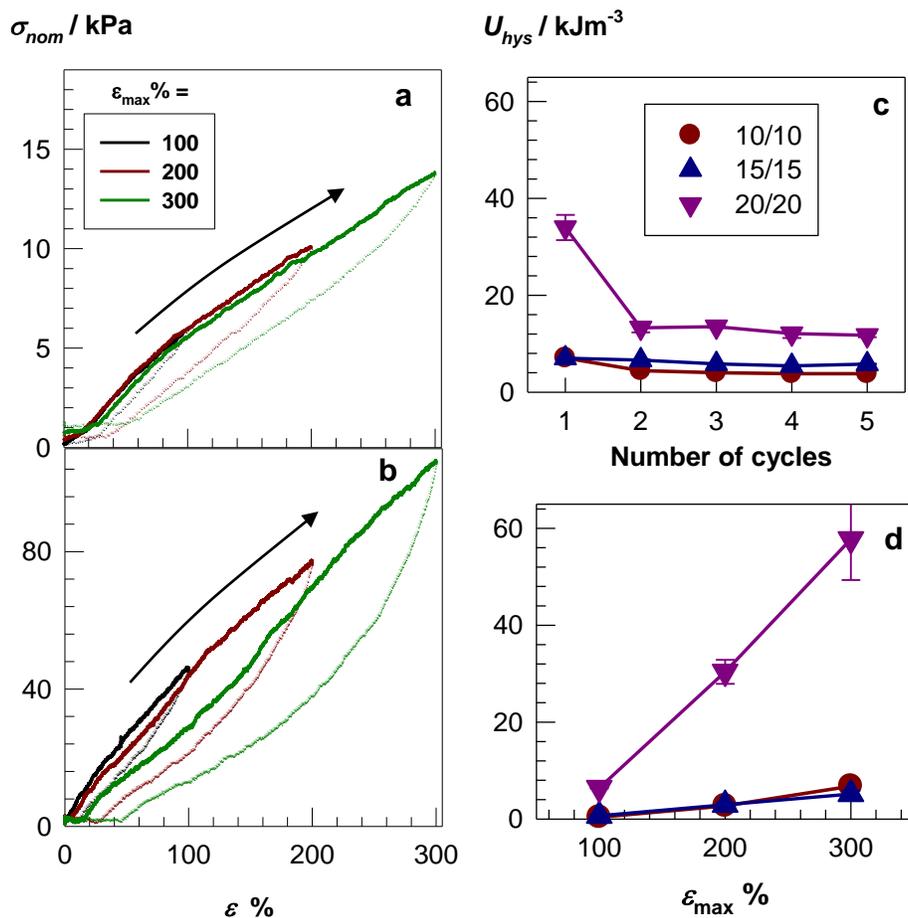
## Supplementary Figures



**Fig. S1** Photographs of a15/15-hydrogel specimen after preparation (left) and after equilibrium swelling in distilled water (right).



**Fig. S2.** pH dependence of the equilibrium swelling ratio  $q_w$  of 15/15-hydrogels formed at various C18 contents.



**Fig. S3.** Stress-strain curves from loading/unloading cyclic tensile tests. **(a, b):** Three successive tensile cycles with increasing  $\epsilon_{max}$  from 100 to 300% elongation conducted on 15/15- (a) and 20/20-hydrogel samples (b). The loading curves are indicated by up arrows. **(c, d):** Hysteresis energy  $U_{hys}$  of the hydrogels during successive tensile cycles shown as a function of the number of cycles up  $\epsilon_{max} = 200\%$  (c), and the maximum strain  $\epsilon_{max}$  (d).