

Supporting Information

Anisotropic Hydrogels with High Mechanical Strength by Stretching-Induced Oriented Crystallization and Drying

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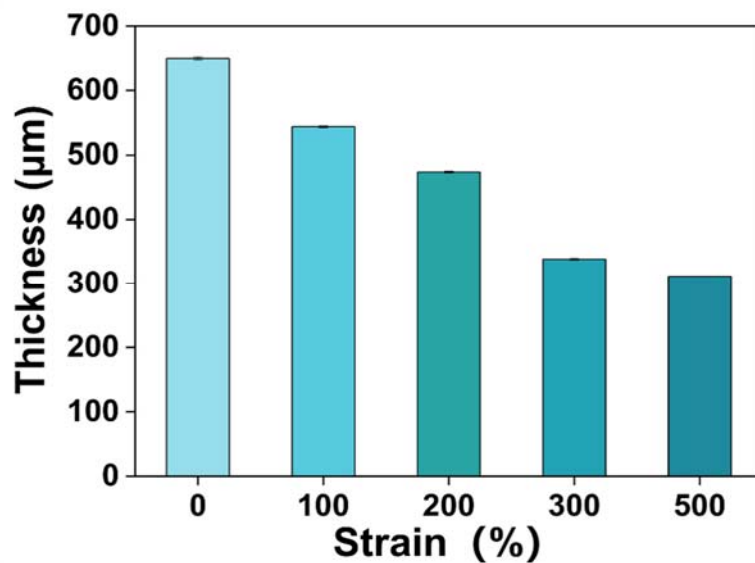


Figure S1. Thickness change of anisotropic PAM-CS hydrogels sheets under different pre-stretching strains in re-swollen state (CS mass concentration, 7.5%; treatment time in alkaline solution, 1 h).

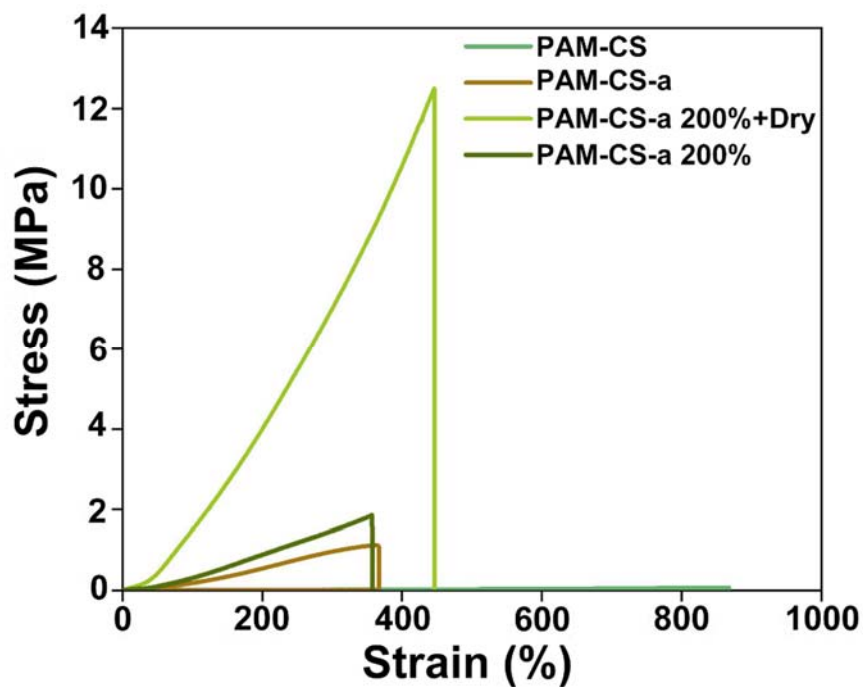


Figure S2. Tensile curves for different kinds of PAM-CS hydrogels. “a” means alkaline solution: “200%” is the pre-stretching strain.

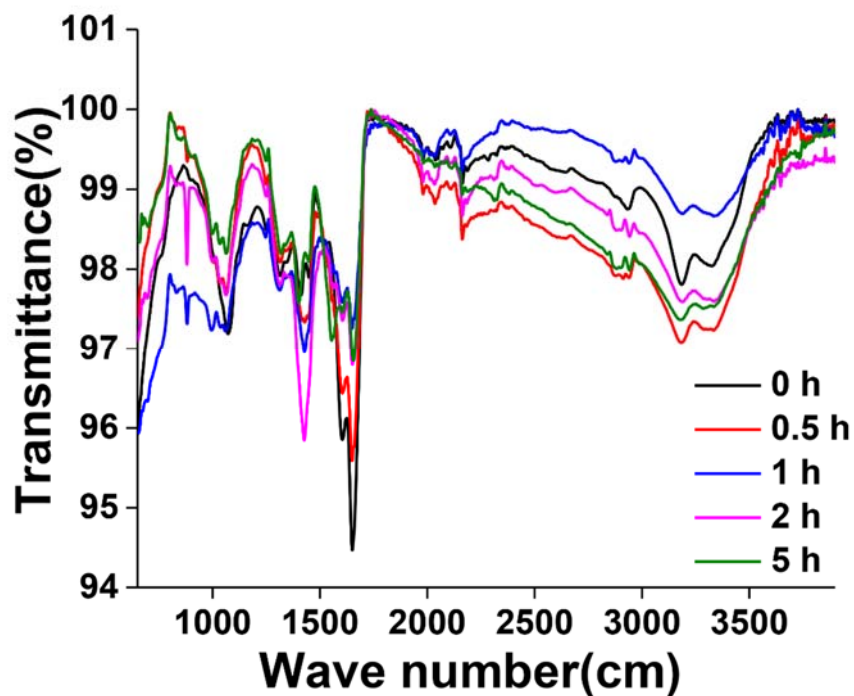


Figure S3. IR of PAM-CS hydrogels with soaking into NaOH solution for different time of 0, 0.5, 1, 2 and 5 h. (The IR of PAM-CS hydrogels with soaking into NaOH solution for different time were detected. It can be seen from the figure that $3290\text{ cm}^{-1} \sim 3346\text{ cm}^{-1}$ is the stretching vibration absorption peak of intermolecular hydrogen bond O-H, and $1646\text{ cm}^{-1} \sim 1659\text{ cm}^{-1}$ is the stretching vibration absorption peak of C=O in amide. However, the absorption peak of C=O in the carboxyl group is $1720\text{ cm}^{-1} \sim 1706\text{ cm}^{-1}$, and there is a wide and strong stretching absorption peak of O-H at $3300\text{ cm}^{-1} \sim 2500\text{ cm}^{-1}$. Then it is believed that polyacrylamide is not hydrolyzed to poly acrylic acid.)

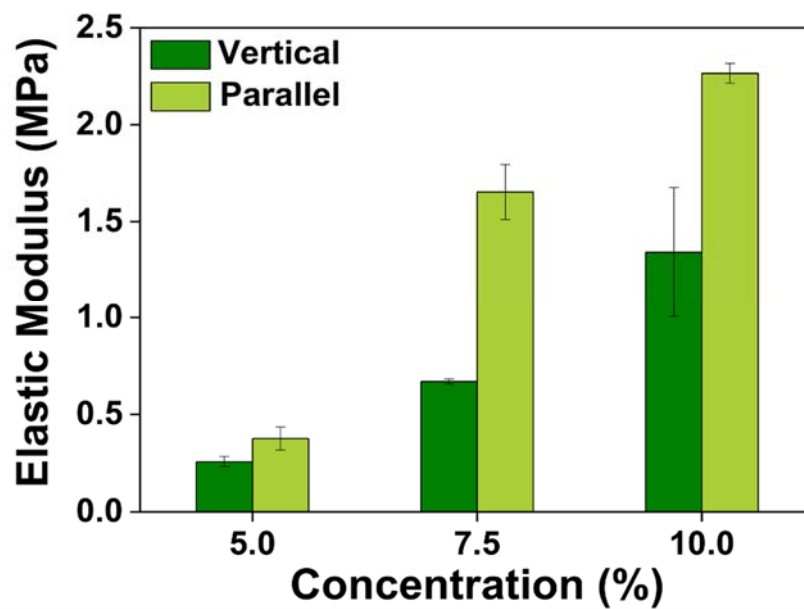


Figure S4. The elastic modulus of hydrogels with different mass concentration of CS. The elastic modulus increases both in parallel and vertical directions with rising the CS mass concentration (pre-stretching strain, 200%; treatment time in alkaline solution, 1 h).