Supplementary information

Strengthening Gelatin Hydrogels Using the Hofmeister Effect

Xujie Wang, Congde Qiao*, Song Jiang, Libin, Liu and Jinshui Yao

School of Materials Science and Engineering, State Key Laboratory of Biobased Material and Green Papermaking, Qilu University of Technology (Shandong Academy of Sciences), Jinan 250353, PR China

* Corresponding author. Tel./fax: +86 531 89631227.

E-mail address: cdqiao@qlu.edu.cn

Postal address:

Daxue Rd. 3501, Jinan 250353, P.R. China

School of Materials Science and Engineering

Qilu University of Technology (Shandong Academy of Sciences)

Table S1. Fitting parameters obtained from Figure 1 through fitting formula (5).

c_{K_3Cit} (M)	X_0	$k \times 10^4$ (s^{-1})	t_{ind} (s)	R^2
0	0.156 ± 0.002	5.065 ± 2.199	N	0.9971
0.1	0.162 ± 0.002	5.252 ± 2.094	N	0.9974
0.3	0.209 ± 0.002	7.038 ± 4.134	N	0.9922

N: the induction period of the early gelation process is very short, and a small amount of triple helices has been formed during the cooling process.

Table S2. The component content of hydrogels immersed in K_3Cit solutions with different concentrations.

Samples	Gelatin [w/w%]	K_3Cit [w/w%]	Water [w/w%]
GP0	10	0	90
GP5	4.80	4.44	90.76
GP10	6.32	7.67	86.01
GP15	10.17	12.63	77.19
GP20	18.10	14.66	67.24
GP30	29.18	19.80	51.02
GP40	40.59	38.23	21.18
GP50	56.47	26.47	17.06

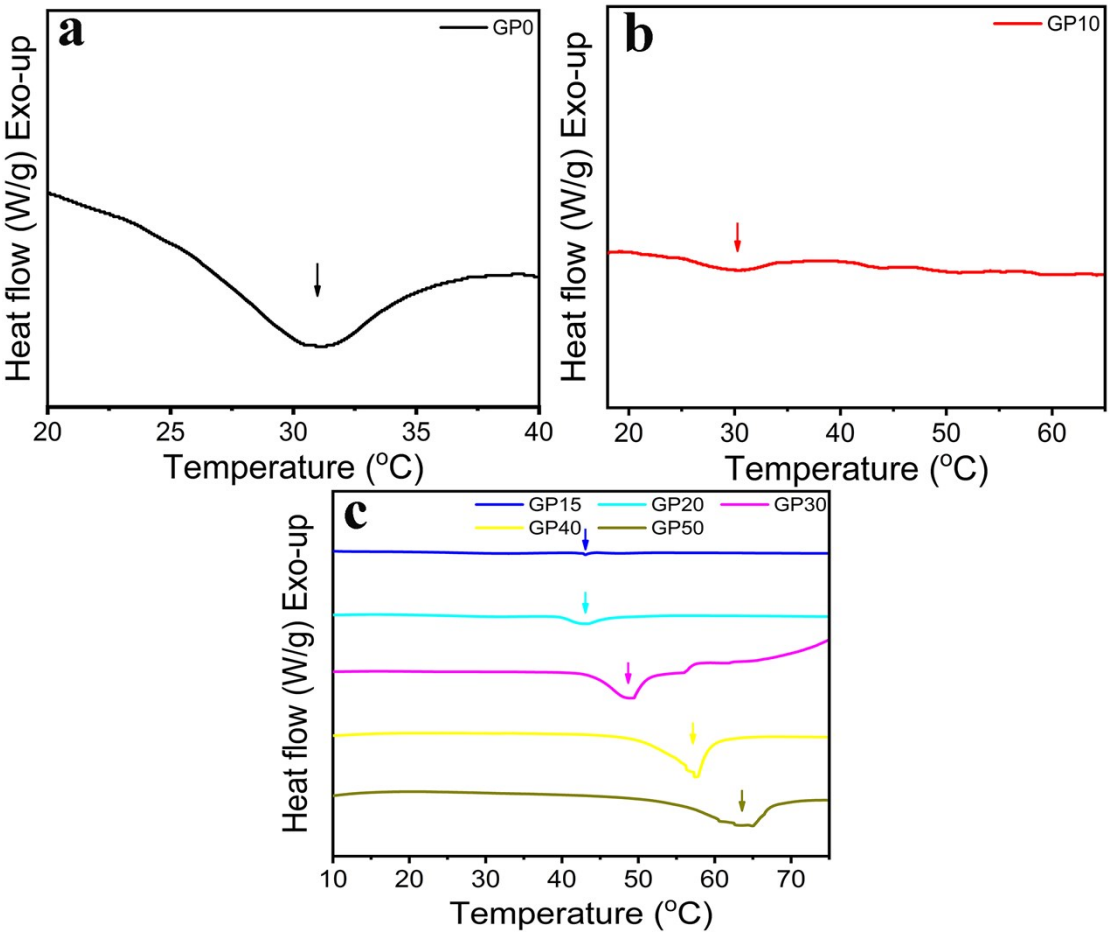

Figure S1. DSC thermograms for a) GP0, b) GP10 and c) other GPx hydrogels. The melting point is marked with an arrow.

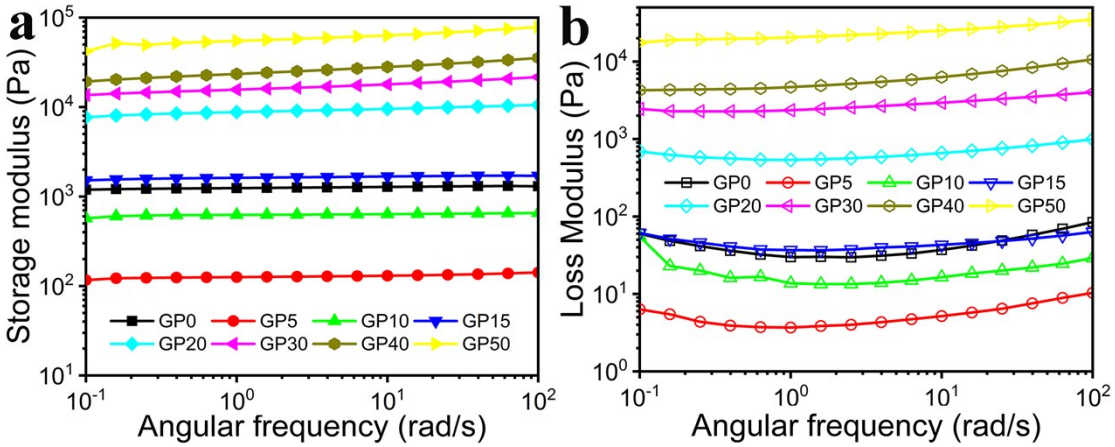

Figure S2. a) Storage modulus and b) loss modulus as a function of angular frequency for original and GPx hydrogels.

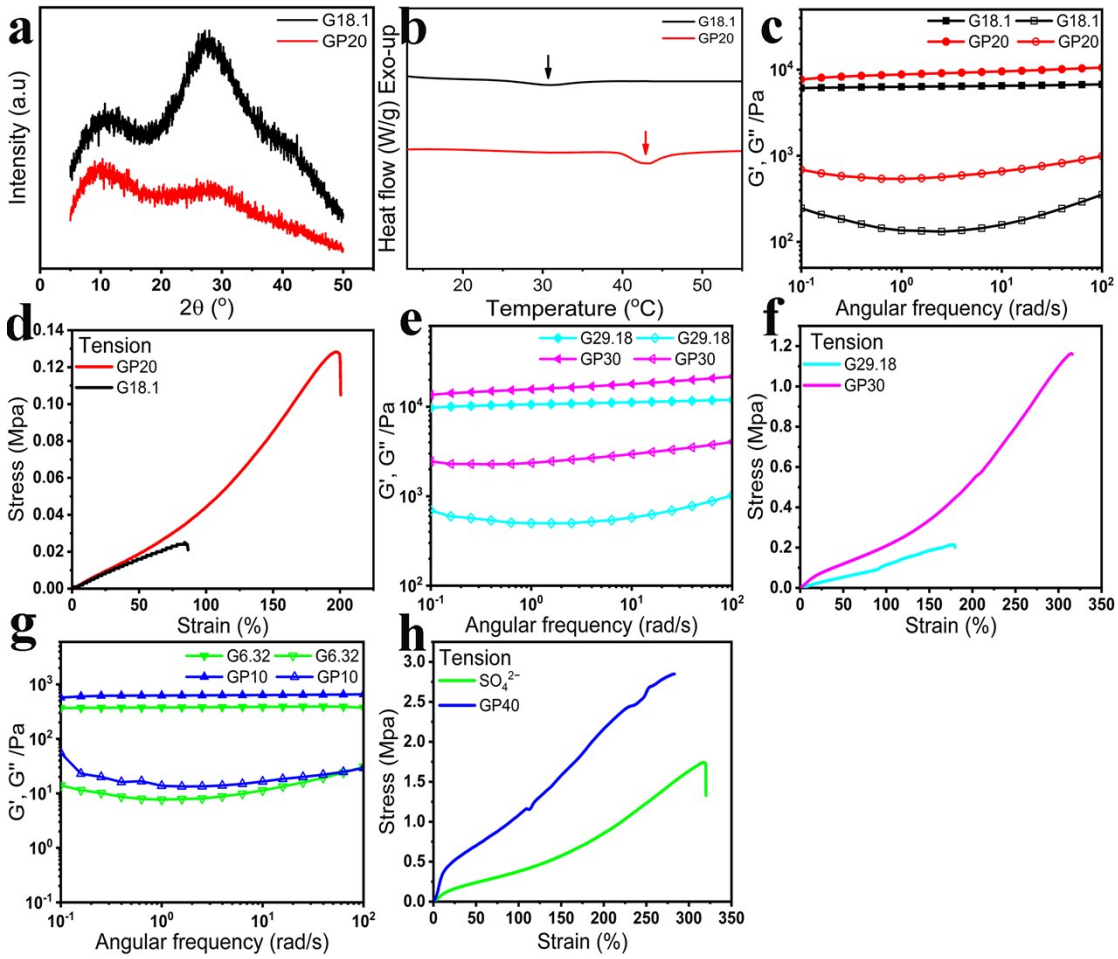

Figure S3. a) XRD diffractograms, b) DSC thermograms, c) rheology patterns with (filled symbols) G′ and (open symbols) G″ and d) tensile stress-strain curves of GP20 hydrogels and the gelatin hydrogels with equivalent gelatin concentration without salt (G18.1). e) Rheology patterns with (filled symbols) G′ and (open symbols) G″ and f) tensile stress-strain curves of GP30 hydrogels and the gelatin hydrogels with equivalent gelatin concentration without salt (G29.18). g) Rheology patterns with (filled symbols) G′ and (open symbols) G″of GP10 hydrogels and the gelatin hydrogels with equivalent gelatin concentration without salt (G6.32). h) Tensile stress-strain curves of GP40 hydrogels and the hydrogels immersed in SO_4^{2-} solution (with mole concentration identical to 40% K_3Cit). There is no control tensile test of

GP10 hydrogels since the hydrogels were too fragile to clamp for the tensile tests.

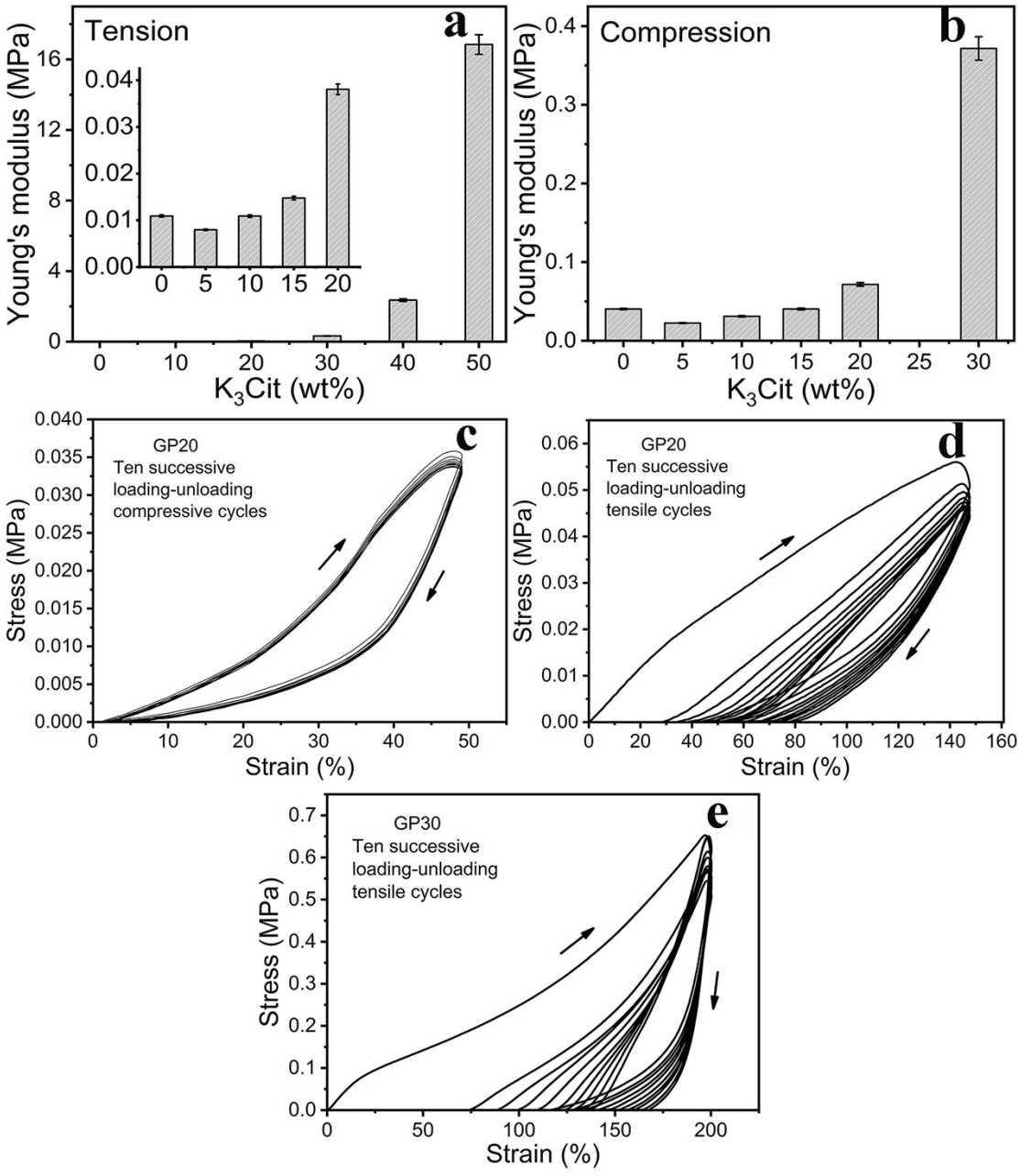

Figure S4. The a) tensile and b) compressive Young's modulus patterns of GPx hydrogels. Ten successive loading-unloading compressive cycles of c) GP20 hydrogels and tensile cycles of d) GP20 and e) GP30 hydrogels.