

Supporting Information

Water state, thermal transition behavior and structure of hydrated gelatin films

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Table S1. The glass transition temperature (T_g), melt temperature (T_m), enthalpy of melting (ΔH_m) and triple helix content (X) of gelatin films with different water contents.

Water content of gelatin films (%)	T_g (°C)	T_m (°C)	ΔH_m (J/g)	X (%)
4.9	125.7 ± 5.3	153.5 ± 8.5	3.5	8
6.3	110.1 ± 3.8	122.1 ± 15.1	3.9	8.8
8	87.2 ± 1.1	109.0 ± 3.3	11.3	25.7
11.4	74.8 ± 2.4	107.0 ± 0.4	19.9	45.2
13.4	63.3 ± 2.6	90.7 ± 2.1	23.5	53.4
17.7	33 ± 3	69.1 ± 0.1	19.7	48.8
19.4	29.6 ± 1.6	62.7 ± 2.0	4.5	10.2
25.8	27.8 ± 2.8	48.3 ± 0.9	3.5	8
31.5	24.8 ± 1.8	47.2 ± 2.4	3.3	7.6
40.9	25.7 ± 0.4	44.6 ± 5	2.7	6.1
57.5	26 ± 2.6	31.1 ± 1.5	2.6	6
113.2	26 ± 0.7	30.1 ± 1.9	2.6	5.9

Table S2. Fitting parameters obtained from Fig. 1 by fitting with Eq. (2).

	M_0	C	K	R^2
Gelatin	13.9 ± 2.5	13.36 ± 2.5	0.44 ± 0.1	0.9916

Table S3. Mechanical properties of gelatin films with different water contents.

Water content of gelatin films (%)	Strength (MPa)	Elongation (%)	E (MPa)
4.9%	10.4 ± 1.5	1.2	8.0 ± 1.2
6.3%	12.1 ± 0.1	4.8 ± 1.7	2.8 ± 1.1
8%	22.0 ± 1.6	2.9 ± 1.1	8.3 ± 3.3
11.4%	26.8 ± 1.4	2.9 ± 0.1	9.2 ± 0.6
13.4%	43.7 ± 2.4	4.0 ± 0.6	11.2 ± 1.9
17.7%	25.7 ± 2.1	5.1 ± 1.2	5.2 ± 2.0
19.4%	18.7 ± 0.8	47.1 ± 8.3	0.4 ± 0.1

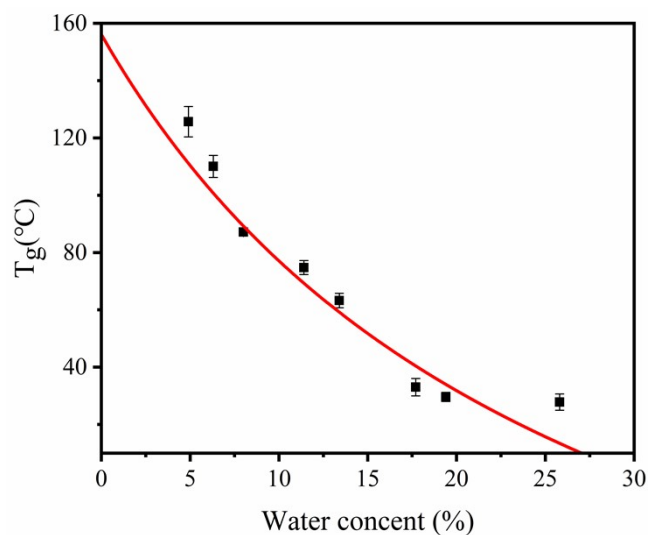


Figure S1. Variation in the glass transition temperature (T_g) of gelatin films as a function of water content.

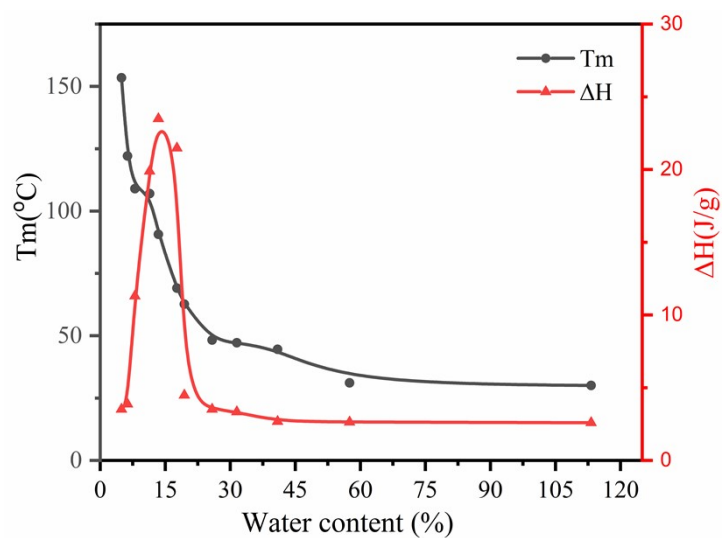


Figure S2. Melting temperature (T_m) and melting enthalpy (ΔH) of gelatin films as a function of water content.

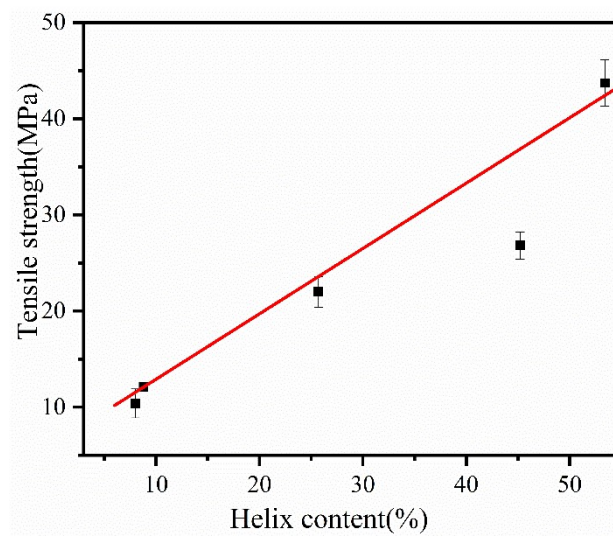


Figure S3. Tensile strength of gelatin films as a function of helix content.