

Electronic Supplementary Information for

Magnesium ions and alginate do form hydrogels: a rheological study

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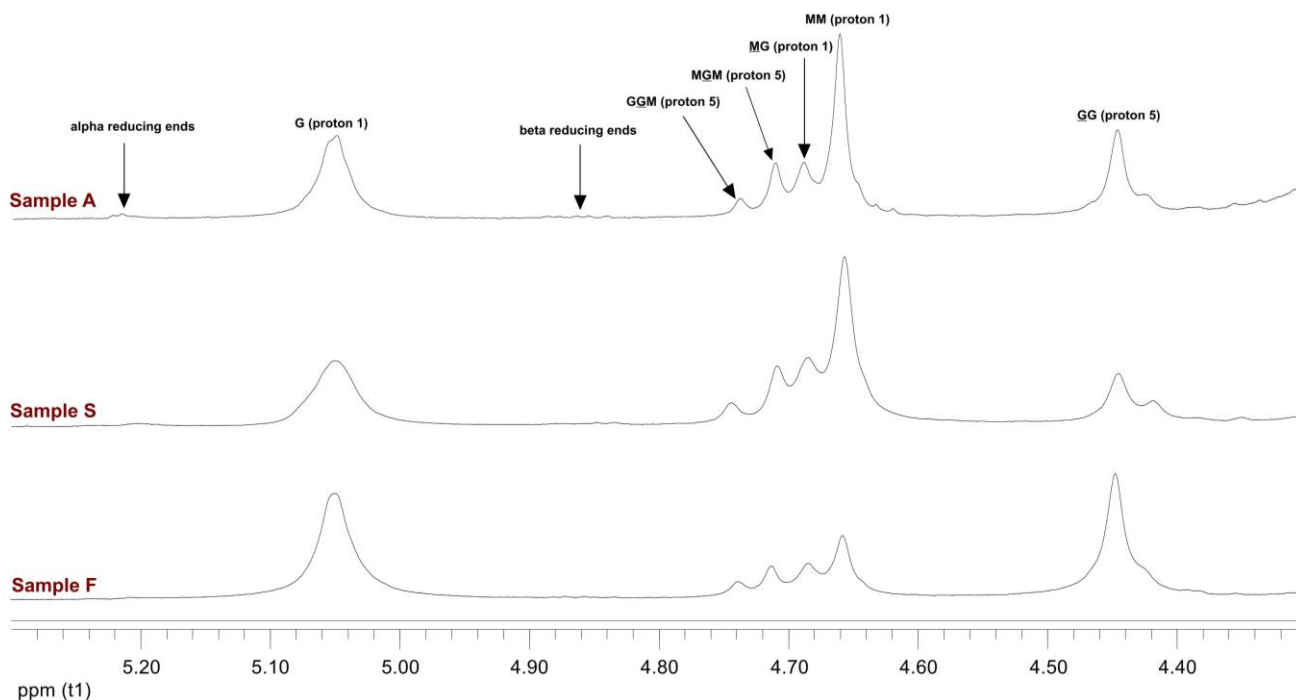


Fig. S1. ¹H NMR spectra of alginates used in this work.

Supplementary Material (ESI) for Soft Matter

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Swelling Test: Mg-Alginate gels prepared in syringes (diameter 4.5 mm) at room temperature for 24 h and then, gels sliced into small pieces with a length of 10 mm. The prepared gels were immersed in vials filled with distilled water (10 mL). Dissolution of gels was observed as a function of time with the naked eye. Experiments were done in two replicates for each sample at room temperature of 23-25 °C.

Table S1. Remarks on the solubility of Mg-alginate gels: Effect of alginate concentration.

Code	wt % (Sample A)	mM (MgCl ₂)	Visual state	
			(24 h later)	Time for solubility ^a (h)
A - 2	2	100	Sol	-
A - 3	3	100	Gel	2.5 (±0.5)
A - 4	4	100	Gel	3 (±0.5)
A - 5	5	100	Gel	3.5 (±0.5)
A - 6	6	100	Gel	4 (±0.5)
A - 7	7	100	Gel	5 (±1)
A - 8	8	100	Gel	5 (±1)

^a based on experimental observation by the naked eye.

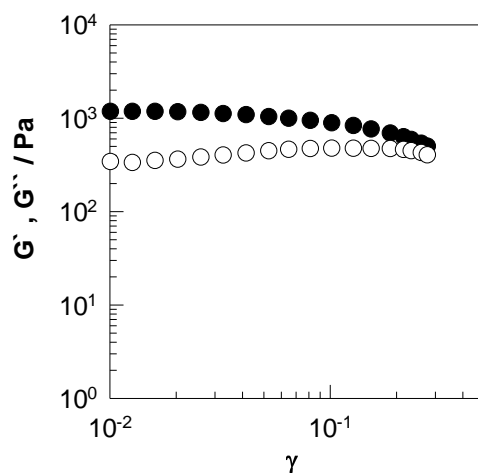


Fig. S2 G' (filled symbols) and G'' (open symbols) of alginate gel at 25 °C as a function of strain γ at $\omega = 1$ Supplementary Material (ESI) for Soft Matter

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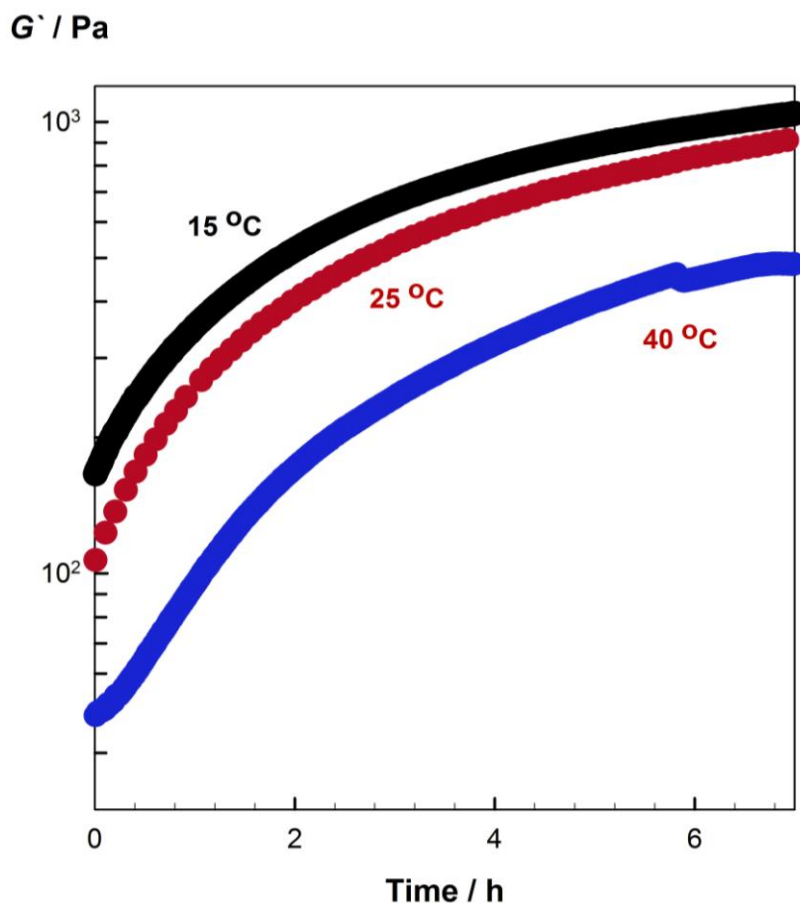


Fig. S3. Changes in elastic moduli of Mg-alginate hydrogels prepared at different gelation temperatures indicated. $C_{\text{alg}} = 5 \text{ wt\%}$ and $C_{\text{Mg}^{2+}} = 100 \text{ mM}$.

The preparation of membrane alginate hydrogel and SEM characterization: Freshly prepared Mg-alginate gels were immersed in a solution of 0.1 wt% alginate sodium solution for 60 s under gentle agitation. Afterwards, gels were transferred into 0.2 M CaCl_2 solution for 5 min. The introduction of hydrogels was observed by Hitachi S-3000N SEM after water sublimation.

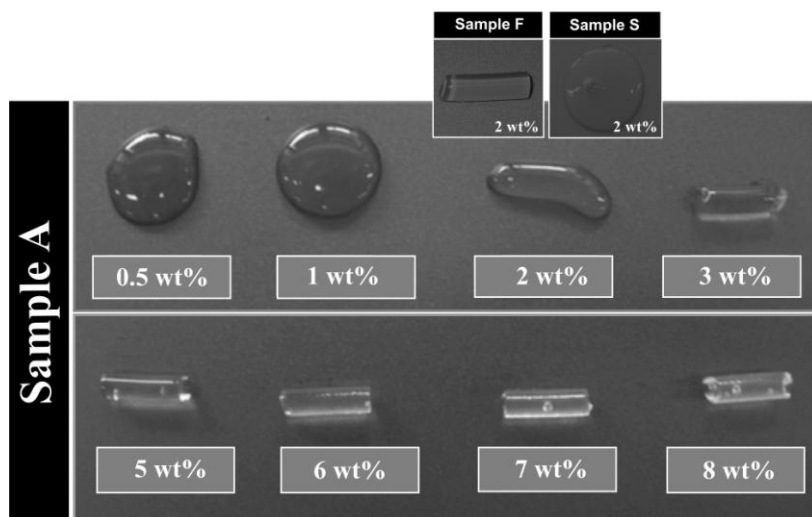


Fig. S4. Representative pictures of alginate gels obtained by ionotropic gelation of Mg^{+2} with different alginate content after 24 h at room temperature.