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[Supplementary Information]

Facile preparation of monolithic κ-carrageenan aerogels

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Figure SI-1: Comparison of EDX spectra of aerogels with commercial κ-carrageenan. The samples were not sputtered. A circular disc-like shape with a thickness of 2-3 mm was used for EDX analysis. The K/S value was obtained from four different spots of each sample. Commercial κ-carrageenan has few percentages of sodium and chlorine. In the aerogel samples, a little of chlorine was observed and no trace of sodium was found. The absence of KSCN in the sample was also supported by EDX analysis where no trace of the element nitrogen was found. In this data, "deformed κ-carrageenan aerogel" means the sample shown in Figure 10b.

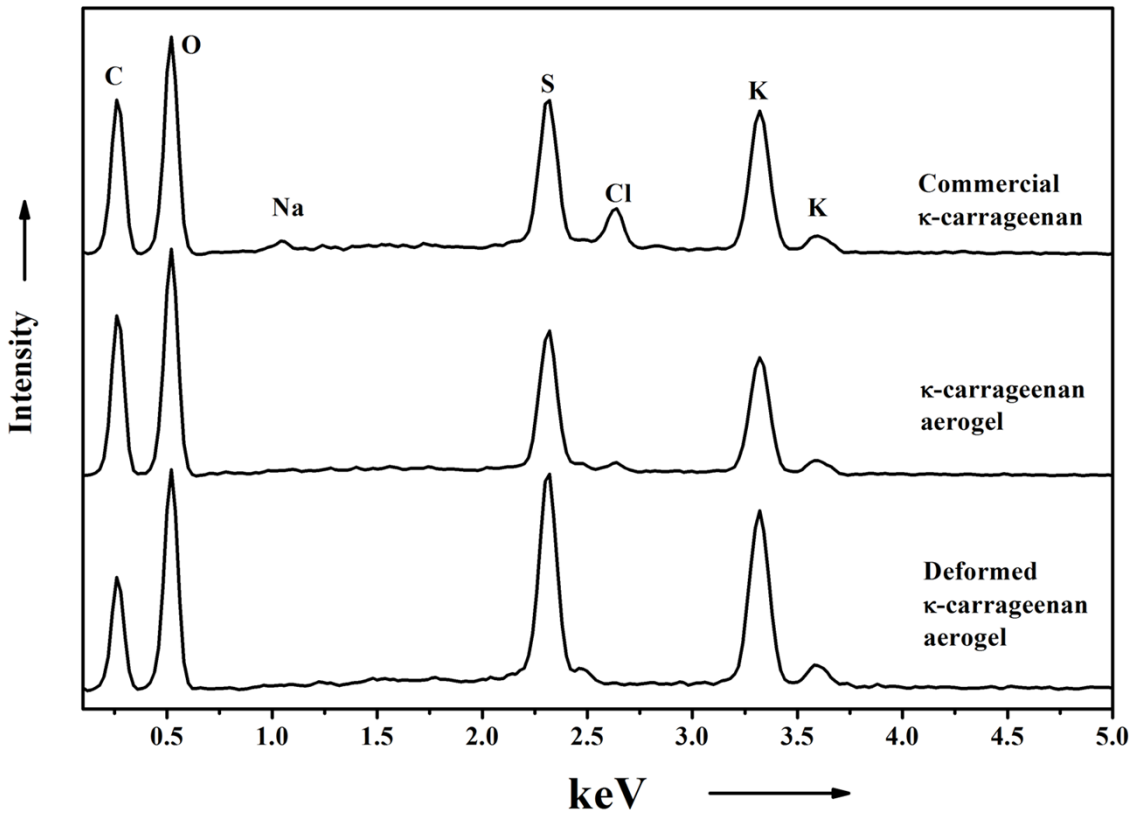
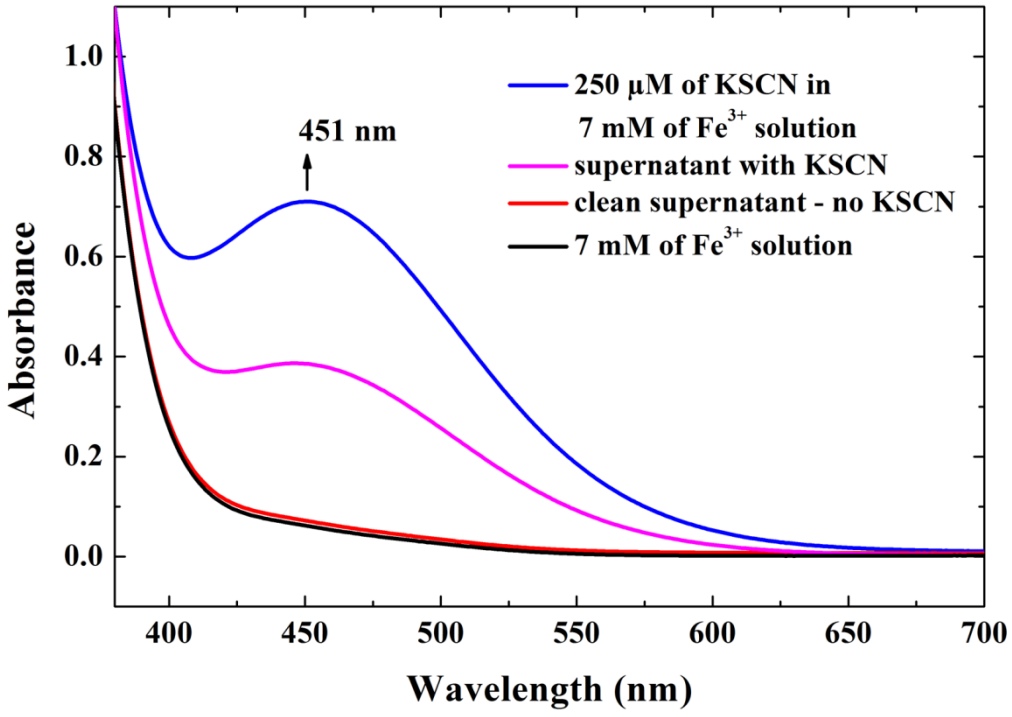


Table SI-1: EDX data of aerogels and commercial κ-carrageenan are shown below.

Sample description	Elements found in atomic percentage						mole of K	mole of S	K/S mole ratio	Average K/S mole ratio (Error value)
	C	Cl	Na	K	O	S				
Commercial Carrageenan	46.35	0.86	0.35	3.09	46.49	2.86	0.3352	0.3783	0.8861	0.9093 (2.6 %)
	46.76	0.83	0.36	3.2	46	2.85	0.3471	0.3770	0.9208	
	47.27	0.88	0.34	3.15	45.59	2.77	0.3417	0.3664	0.9326	
	46.51	0.89	0.45	3.48	45.5	3.18	0.3775	0.4206	0.8976	
1 wt % of κ-carrageenan in monolithic aerogel	48.53	0.2	-	2.96	45.39	2.92	0.3211	0.3862	0.8314	0.8252 (0.7 %)
	46.72	0.20	-	3.03	47.05	3.00	0.3244	0.3995	0.8202	
	47.45	0.19	-	3.04	46.30	3.03	0.3298	0.4008	0.8228	
	49.11	0.17	-	3.99	42.77	3.96	0.4328	0.5238	0.8263	
2 wt % of κ-carrageenan in monolithic aerogel	46.58	-	-	3.01	47.18	2.97	0.3200	0.3900	0.8312	0.8575 (4.3 %)
	45.35	0.2	-	3.69	47.18	3.58	0.4003	0.4735	0.8454	
	44.70	0.16	-	5.50	44.64	4.99	0.5966	0.6601	0.9039	
	47.53	0.19	-	2.81	46.72	2.75	0.3048	0.3638	0.8379	
3 wt % of κ-carrageenan in monolithic aerogel	46.22	0.21	-	3.36	46.76	3.45	0.3645	0.4564	0.7985	0.8263 (3.3 %)
	45.92	0.18	-	3.33	47.24	3.32	0.3612	0.4392	0.8226	
	46.95	0.24	-	3.34	46.26	3.21	0.3623	0.4246	0.8533	
	47.91	0.23	-	3.14	45.62	3.10	0.3406	0.4101	0.8306	
Deformed κ-carrageenan aerogel	40.92	-	-	4.34	50.16	4.58	0.4708	0.6058	0.7771	0.7716 (1.5 %)
	39.12	-	-	4.5	51.67	4.71	0.4882	0.6230	0.7836	
	40.46	-	-	3.95	51.35	4.23	0.4285	0.5595	0.7658	
	45.77	-	-	3.40	47.15	3.67	0.3688	0.4855	0.7597	

Figure SI-2: UV-Vis spectra of ferric nitrate and ferric thiocyanate solutions. The spectra of ferric thiocyanate solution[1] (in final aqueous solution, [Fe^{3+}] = 7 mM; [SCN^-] = 250 µM; absorbance maxima = 451 nm; blue line) and a pure aqueous solution of ferric nitrate[1] (7 mM; black line) were compared with the titrated solution of Fe^{3+} and KSCN. After two times washing of fresh hydrogel, the washed supernatant solvent – acetone was diluted to 120 times with 7 mM of aqueous solution of ferric nitrate. The spectrum (pink line) showed an absorption band with a maximum absorbance value (0.39) at 447 nm. After complete washing, 100 mL of the washed supernatant solvent i.e., acetone was concentrated to 1 mL by the evaporation of acetone in fume hood at 40 °C. Then the concentrated acetone was diluted to 20 times with aqueous solution of ferric nitrate. Analyzing this solution in UV-Vis spectrum gave the indication of complete removal of KSCN from gel body (see red line) which is almost overlapping the ferric nitrate solution (black line). In this study, deionized water was used as reference and for the baseline correction. So we suspect that the difference in absorption maxima may be caused by the trace amount of acetone in aqueous solution.



References:

1. G. Peintler, A. Nagy, A. K. Horvath, T. Körtvelyesi and I. Nagypal, *Phys. Chem. Chem. Phys.*, 2000, **2**, 2575-2586.