

Supporting information

Functionalization of an alginate-based Material by Oxidation and Reductive Amination

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The molecular weight of commercial sodium alginate was evaluated by Size-exclusion chromatography (SEC) with online multi-angle static laser light scattering (MALLS), which were performed at ambient temperature on an HPLC system consisting of a solvent reservoir, on-line degasser, HPLC isocratic pump, automatic sample injector, pre-column, and a G6000PW main column. The column outlet was connected to a Dawn HELEOS-II multiangle laser light scattering photometer (Wyatt, U.S.A.) ($\lambda_0 = 663.8 \text{ nm}$) followed by Shodex RI-501 refractive index detector. The eluent was $0.15 \text{ mol L}^{-1} \text{ NaNO}_3$, $0.01 \text{ mol L}^{-1} \text{ EDTA}$ (pH = 6.0) and the flow rate was 0.5 mL min^{-1} . Samples (1 mg mL^{-1}) were filtered (pore size $0.45 \mu\text{m}$) before injection and each sample were analyzed twice with injection volume 50 and $100 \mu\text{L}$. Data were collected and processed (with $dn/dc = 0.150 \text{ mL g}^{-1}$) using the Astra (v. 7.3.0) software (Wyatt, U.S.A.). The analysis was performed according to the ASTM protocol nr. F2602 – 13.

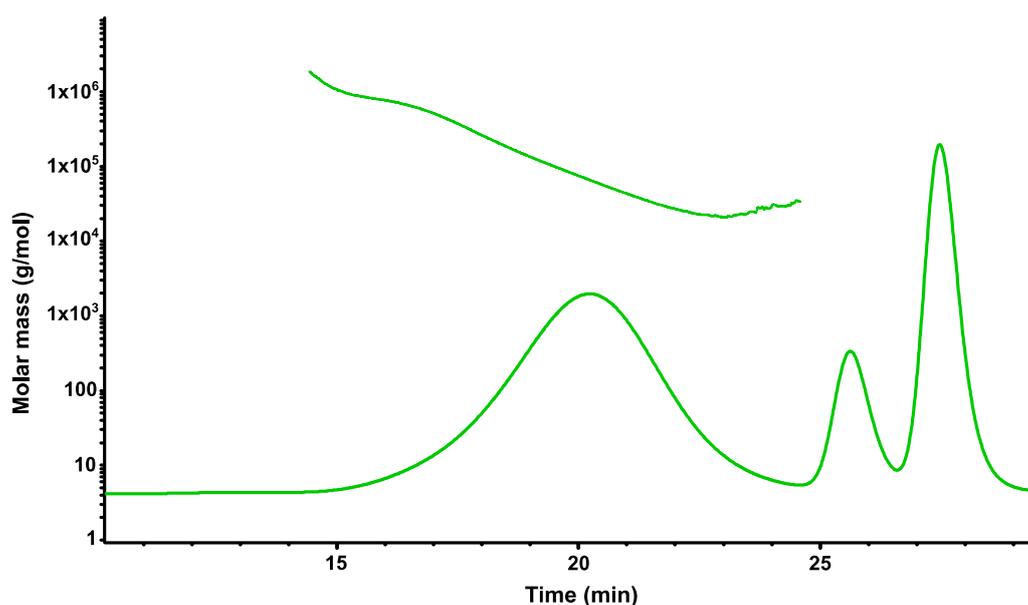


Figure S1. Refractive index chromatogram of commercial sodium alginate used as starting material.

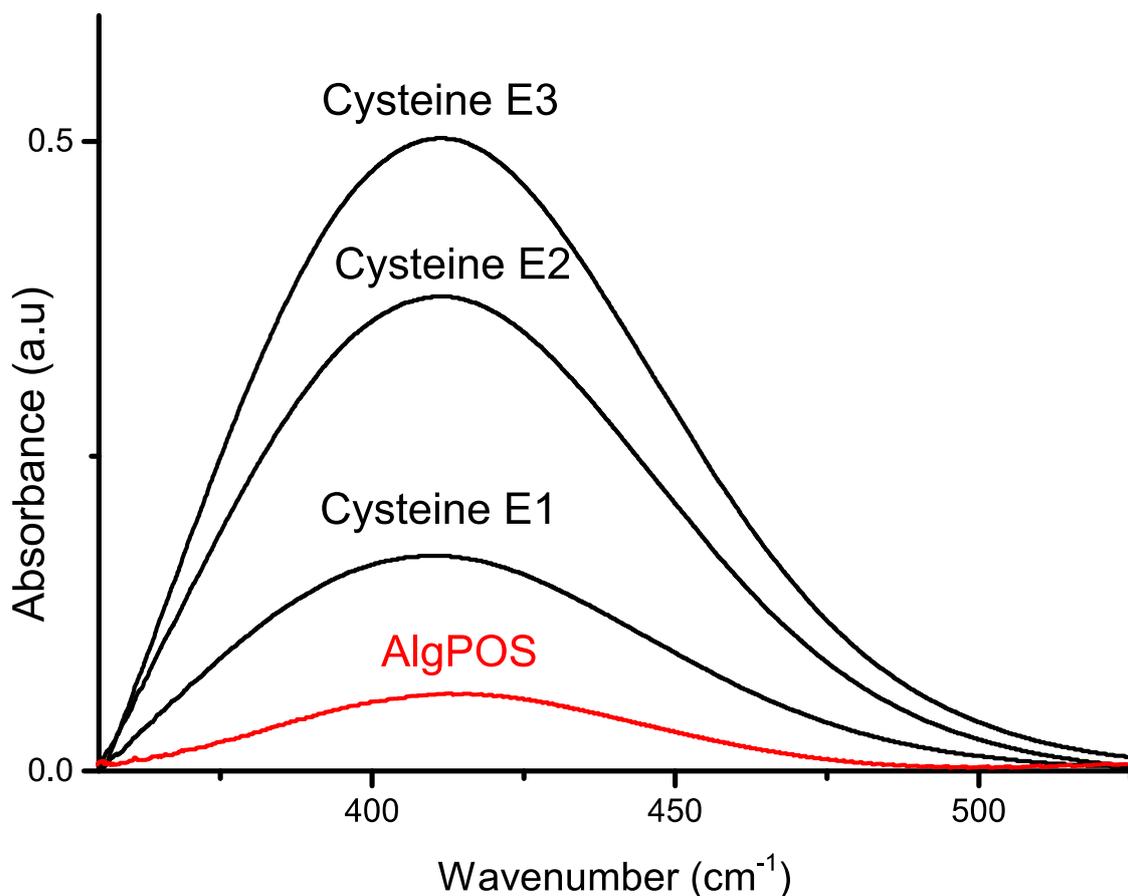


Figure S2. UV-Vis spectra of cysteine standards (E1, E2 and E3) and AlgPOS. Evaluation of thiols group by Ellman’s reaction.

Table S1. Values obtained of commercial sodium alginate by SEC-MALS

Sample	Mn	Mw	PI (Mw/Mn)
Sodium alginate (Sigma Aldrich)	58.6	124.7	2.1
	57.0	123.7	2.2
Average	57.8	124.2	2.1

Table S2. Values obtained of commercial sodium alginate by ¹H NMR

Sample	F _G	F _M	F _{GG}	F _{GM}	F _{MM}	F _{GGM}	F _{MGM}	F _{GGG}	N(G>1)	M/G
Sodium alginate (Sigma Aldrich)	0.49	0.50	0.30	0.18	0.31	0.07	0.11	0.24	5.33	1.02

Table S3. Values obtained of AlgPOS by UV-Visible.

Sample	Absorbance	[C] (μM)	V(mL)
Cysteine E1	0.171	24.6	10
Cysteine E2	0.377	49.2	10
Cysteine E3	0.503	61.5	10
AlgPOS	0.086	74.7	200