

SUPPLEMENTARY MATERIAL

Characterization of Gellan Gum by Capillary

Electrophoresis

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Repeatability of Electropherograms of Various Gellan Gum Samples

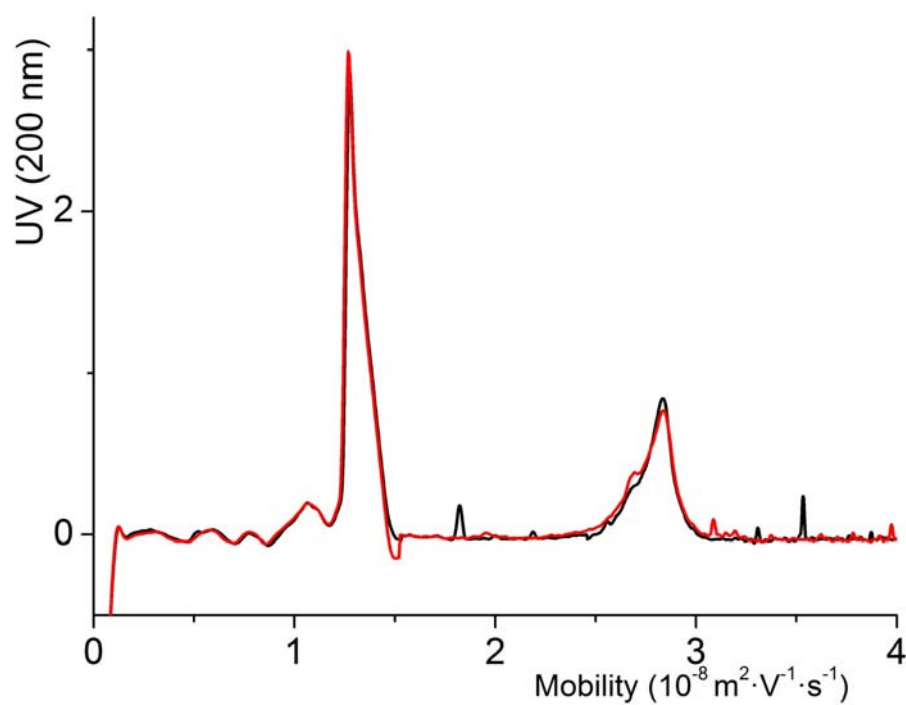


Fig. S1. Repeatability test (injection series 1): electropherograms of sample LAGG.

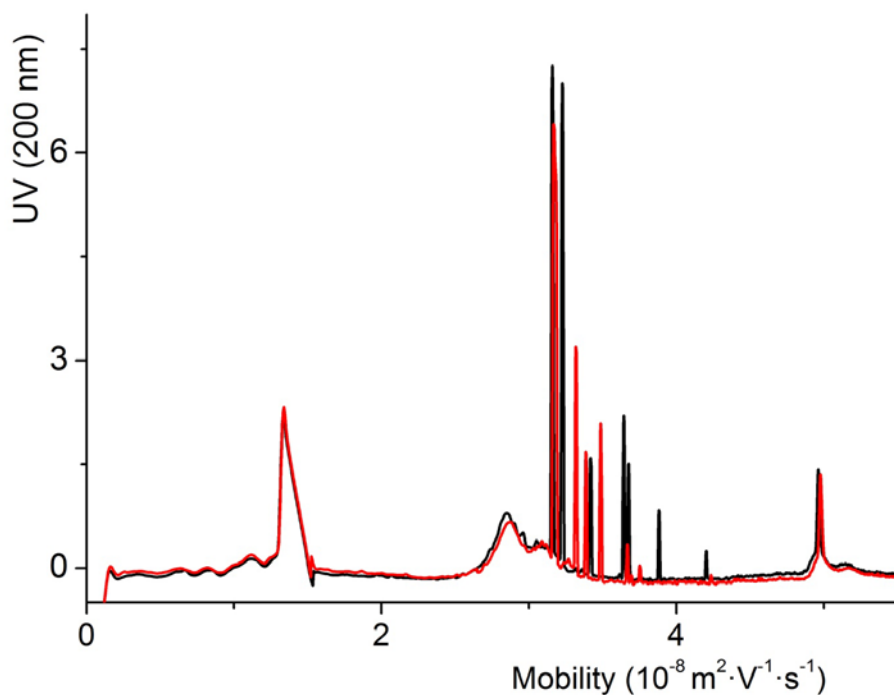


Fig. S2. Repeatability test (injection series 1): electropherograms of sample HAGG dissolved for a few hours. The presence of sharp signals in the mobility range between $3.2 \cdot 10^{-8}$ and $4.5 \cdot 10^{-8} \text{ m}^2 \cdot \text{V}^{-1} \cdot \text{s}^{-2}$ is repeatable; however, the mobility of individual signals varies.

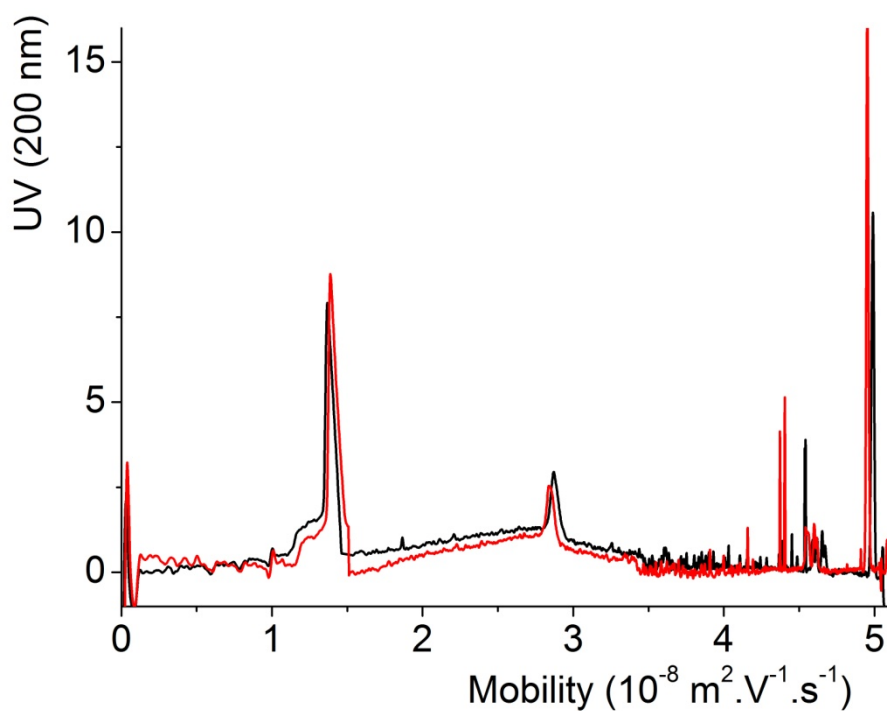


Fig. S3. Repeatability test (injection series 3): electropherograms of sample HAGG dissolved for five days.

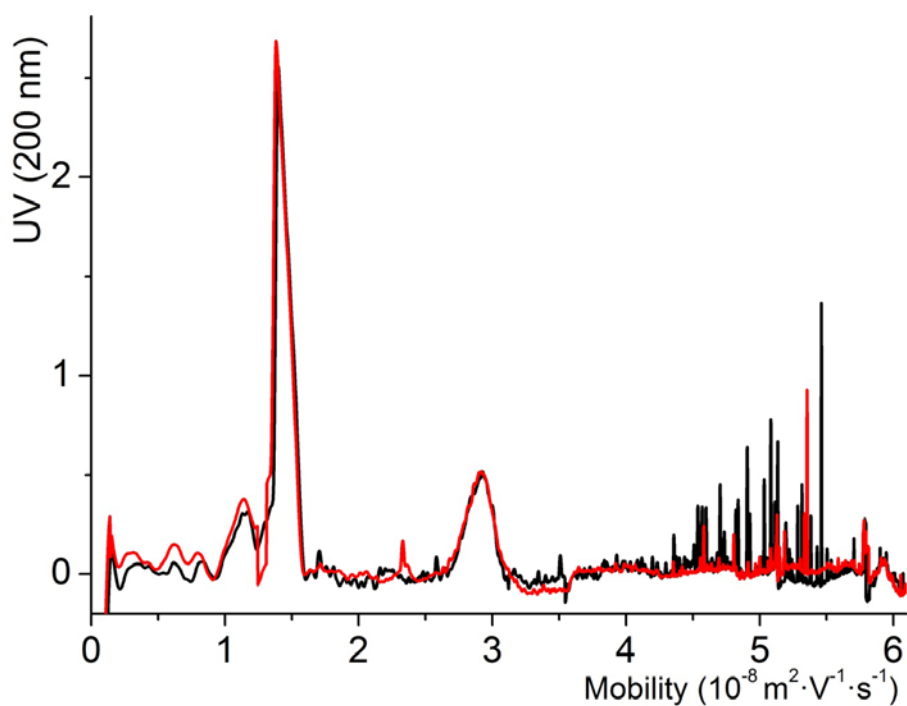


Fig. S4. Repeatability test (injection series 1): electropherograms of sample LAGG-Tem. The sharp ‘signals’ at mobilities higher than $4.5 \cdot 10^{-8} \text{ m}^2 \cdot \text{V}^{-1} \cdot \text{s}^{-1}$ are not repeatable and are assigned to air bubbles.

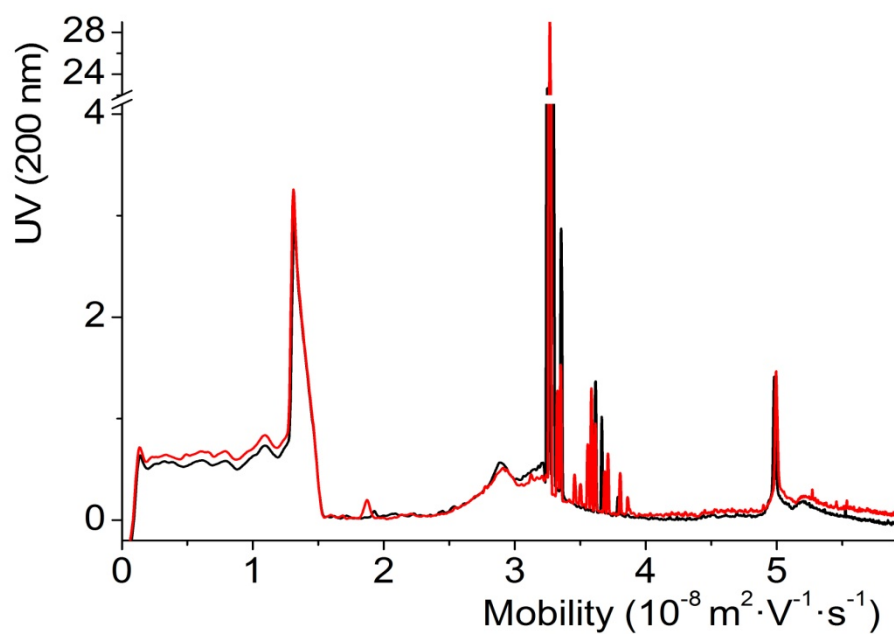


Fig. S5. Repeatability test (injection series 1): electropherograms of sample HAGG-Exp.

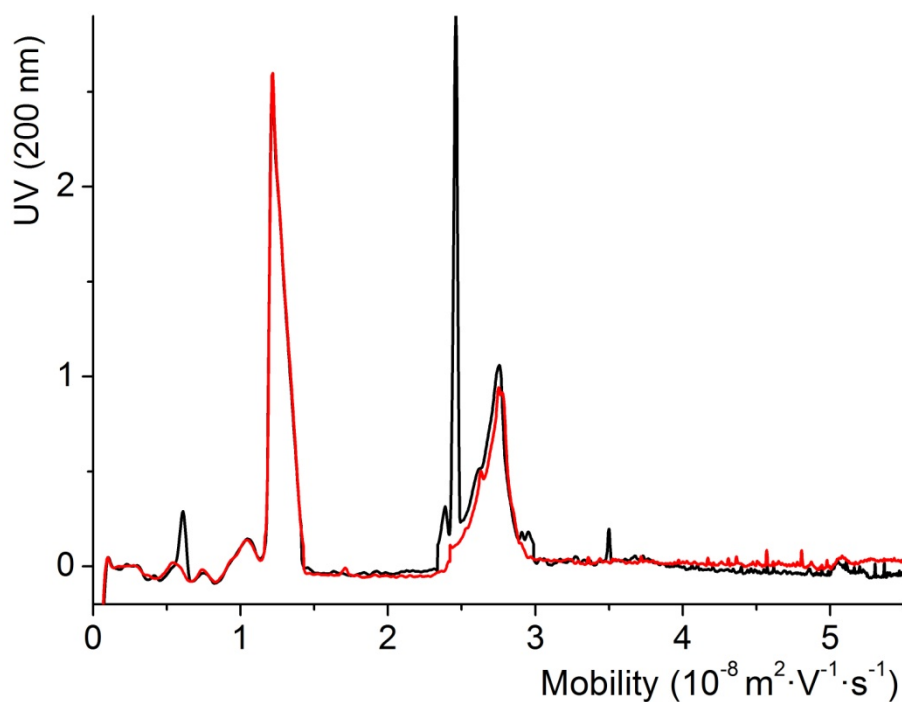


Fig. S6. Repeatability test (injection series 1): electropherograms of sample LAEFGG. The sharp ‘signals’ with mobilities of $2.45 \cdot 10^{-8}$ and of $3.5 \cdot 10^{-8} \text{ m}^2 \cdot \text{V}^{-1} \cdot \text{s}^{-1}$ are not repeatable and are assigned to air bubbles.

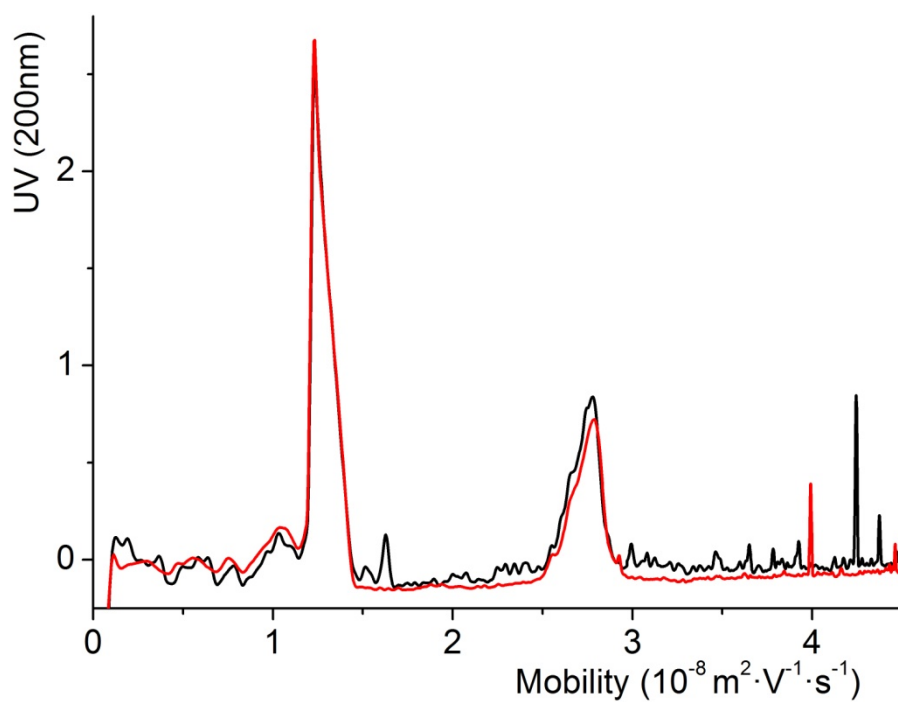


Fig. S7. Repeatability test (injection series 1): electropherograms of sample LAEFGG-Son.

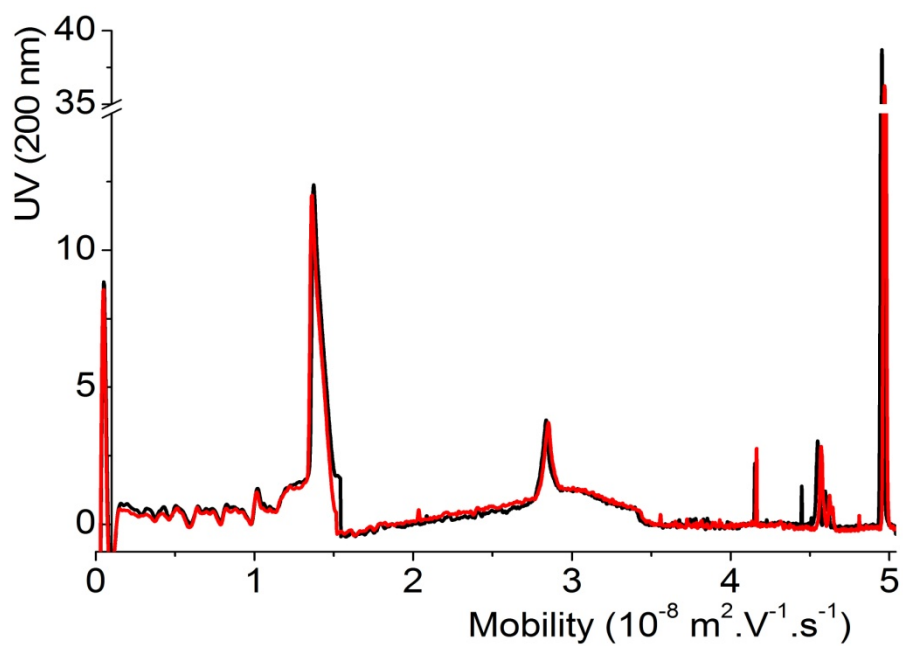


Fig. S8. Repeatability test (injection series 3): electropherograms of sample HAGG-Son.

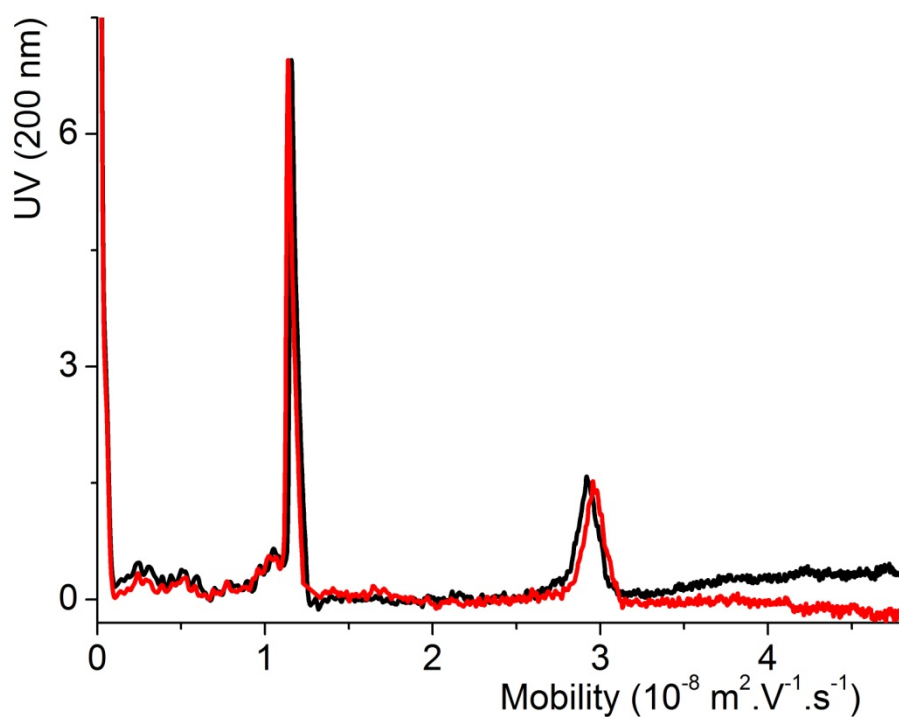


Fig. S9. Repeatability test (injection series 3): electropherograms of sample LAGG-Exp in potassium borate buffer 150 mM.

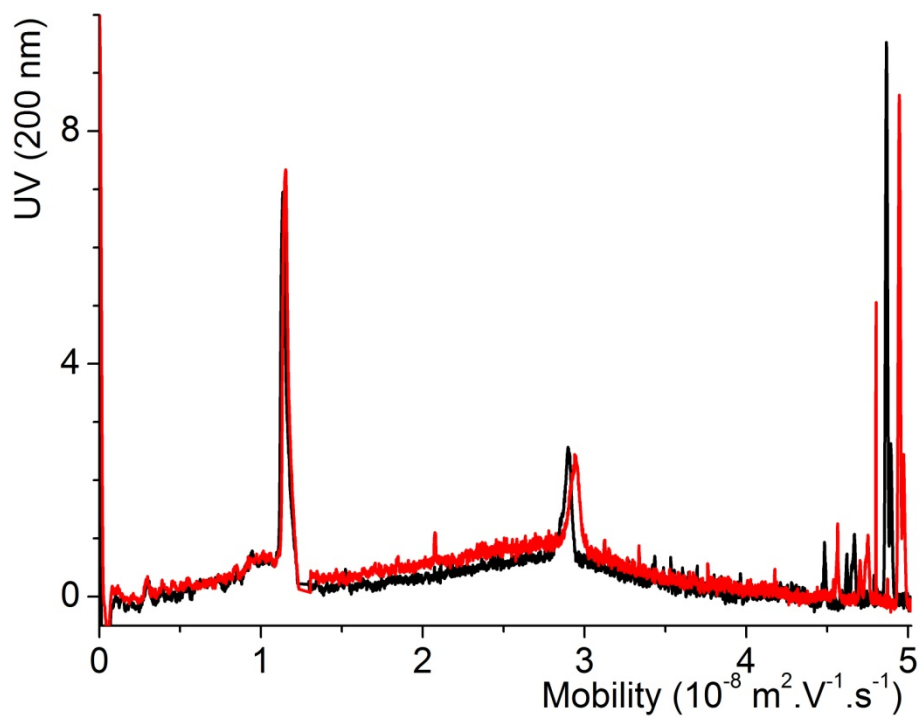


Fig. S10. Repeatability test (injection series 3): electropherograms of sample HAGG in potassium borate buffer 150 mM.

Appearance of Gellan Gum Samples in Water



Fig. S11. Photograph of gellan gum samples after stirring for 1 hour in 80°C water: high-acyl gellan (left) and low-acyl gellan (right). Both samples contain a white oval magnetic stirrer, clearly visible in right vial and hardly discernable in the left vial.

UV absorption spectra of the different signals of gellan gums

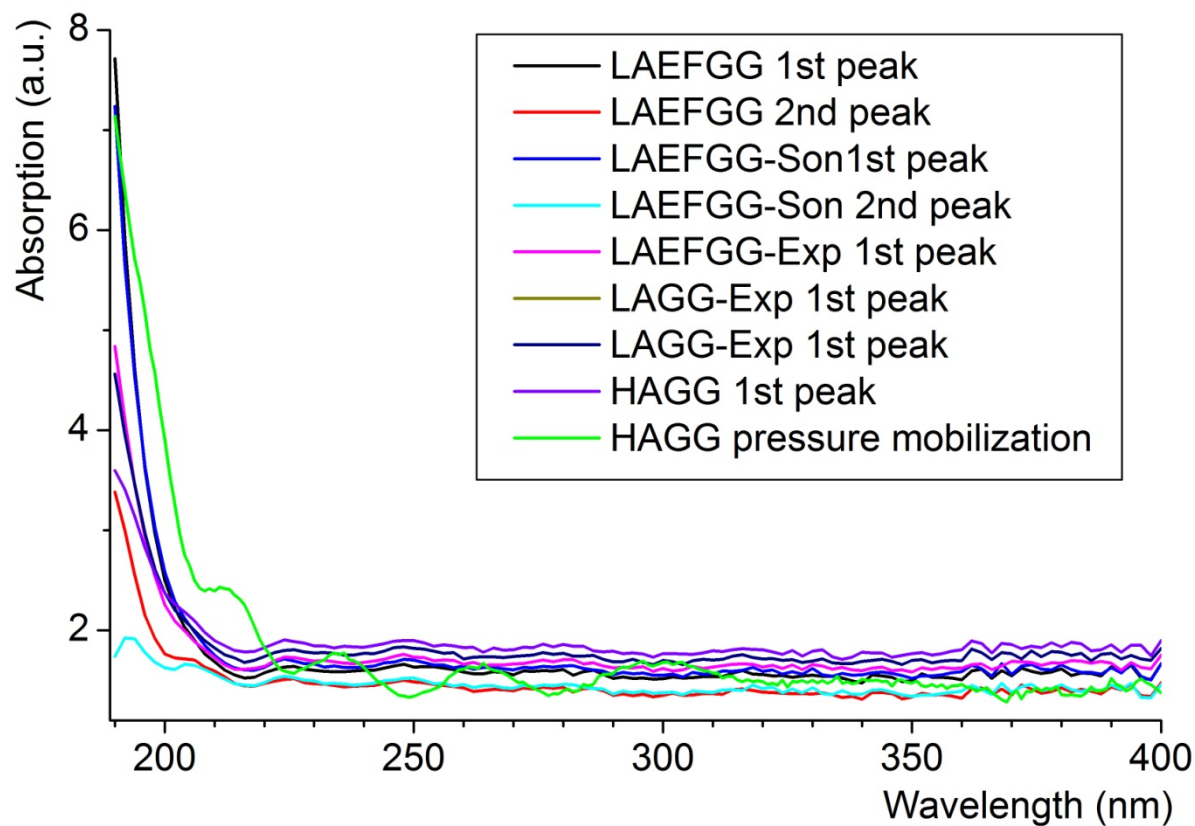


Fig. S12: UV absorption spectra obtained with the diode array detector of the capillary electrophoresis for the peaks at $1.5 \text{ m}^2 \cdot \text{V}^{-1} \cdot \text{s}^{-1}$ (first peak) and $2.8 \cdot 10^{-8} \text{ m}^2 \cdot \text{V}^{-1} \cdot \text{s}^{-1}$ (second peak) for different gellan gums samples.

Mobility of poly(sodium acrylate)

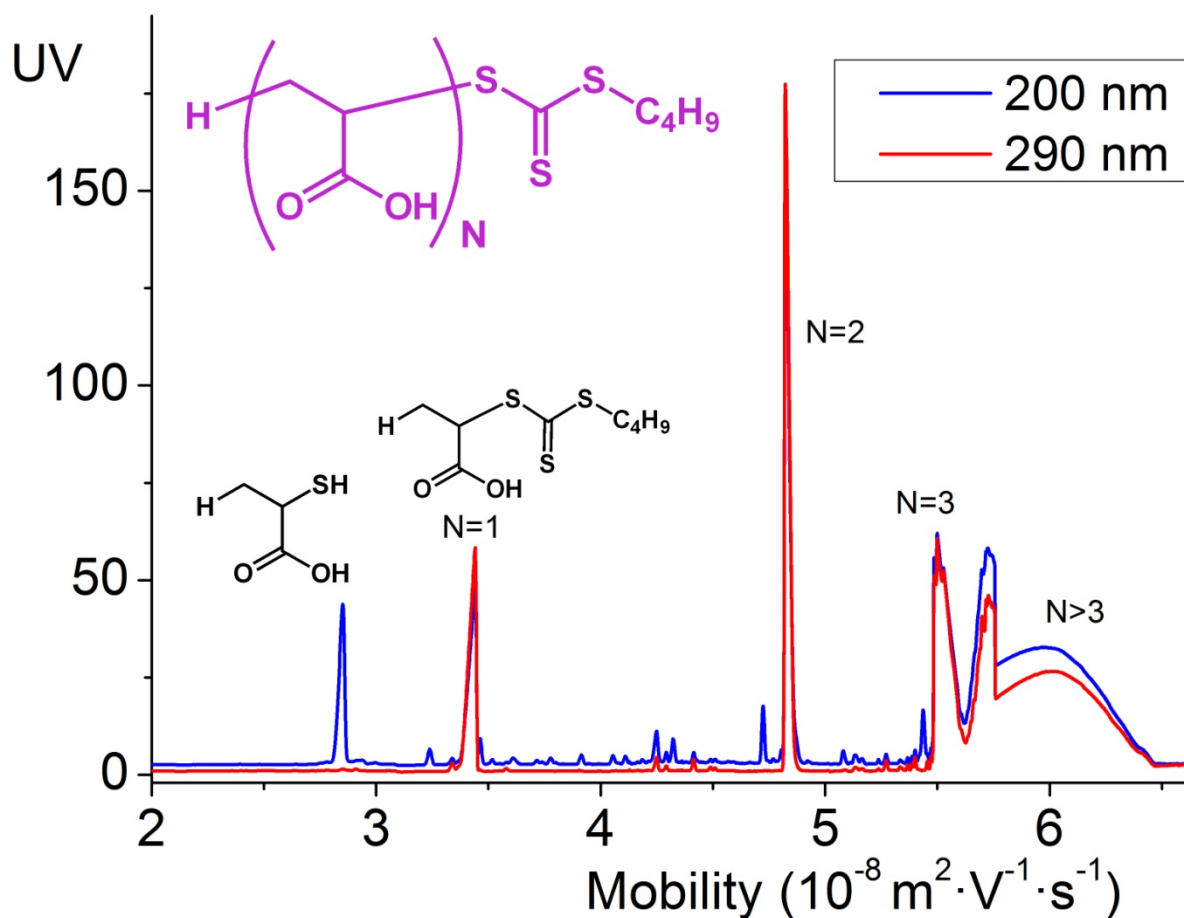


Fig. S13. Electropherogram of oligo(sodium acrylate) in the same conditions as the gellan gum (in sodium borate 200 mM, at 55 °C): the chains with more than 10 monomer units are in the broad signal around $6 \text{ m}^2 \cdot \text{V}^{-1} \cdot \text{s}^{-1}$ (for signal assignment, see P. Castignolles, M. Gaborieau, E. F. Hilder, E. Sprong, C. J. Ferguson, R. G. Gilbert, *Macromolecular Rapid Communications* 2006, 27, 42).

¹H NMR Spectrum of 'Low-Acyl' Gellan Gum

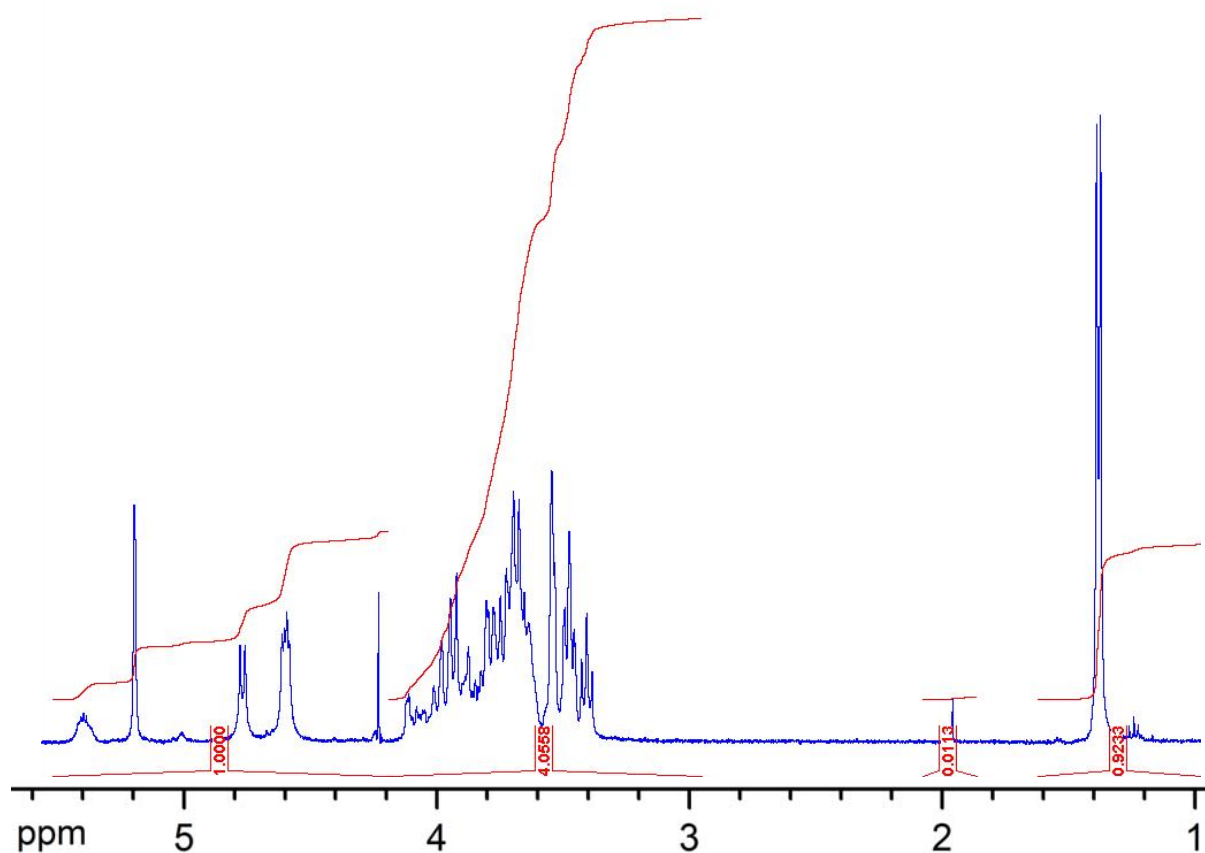


Fig. S14. ¹H NMR spectrum of LAGG-Exp (1%) in D₂O at 85 °C. It was recorded on a Bruker Avance III spectrometer at a Larmor frequency of 400 MHz, with water suppression through presaturation, using a 8.75 μs 90° pulse, a 8.5 s repetition delay and 32 scans. The signals at 2 and 1.4 ppm are the methyl groups of the acetyl substituent and of the rhamnose sugar respectively. This spectrum is identical to the spectrum of gellan gum (M. Tako, T. Teruya, Y. Tamaki, T. Konishi. *Colloid and Polymer Science* 2009, 287, 1445). It shows that the low-acyl gellan is (almost) fully deacetylated and that there are no significant impurities such as residues from bacteria or from the fermentation medium.

Relative Intensity of First Peak of Electropherograms

<i>Sample</i>	<i>Series</i>	<i>Fraction first peak (%)</i>			
		<i>Individual injection</i>	<i>Average</i>	<i>Standard deviation</i>	<i>Maximum deviation to the average</i>
LAGG-Exp	1	55.9	57.7	5.48	8.5
	1	57.7			
	1	66.0			
	1	60.1			
	4	49.2			
	4	57.3			
LAGG-Tem	1	77.7	77.8		0.1
	1	77.9			
LAFFGG	1	39.6	43.7		4.1
	1	47.8			
LAFFGG-Exp	1	61.0	60.0		1.0
	1	59.1			
LAFFGG-Son	1	56.7	61.2		4.5
	1	65.6			
HAGG	1	23.7	23.6	5.75	9.6
	1	24.7			
	3	22.0			
	3	33.2			
	3	15.3			
	3	22.6			
HAGG-Exp	1	23.5	23.4		0.1
	1	23.2			
HAGG-Son	3	32.1	31.2		10.7
	3	41.9			
	3	19.6			

Table S1. Fraction of the area of the peak with the lowest electrophoretic mobility (m_{ep} around $1.3 \cdot 10^{-8} \text{ m}^2 \cdot \text{V}^{-1} \cdot \text{s}^{-1}$) to the whole electropherogram for different gellan gum samples in different experimental conditions for the capillary electrophoresis measurements (Series).