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Supporting information for article:

**Complex solutions under shear and pressure – a rheometer setup
for X-ray scattering experiments**

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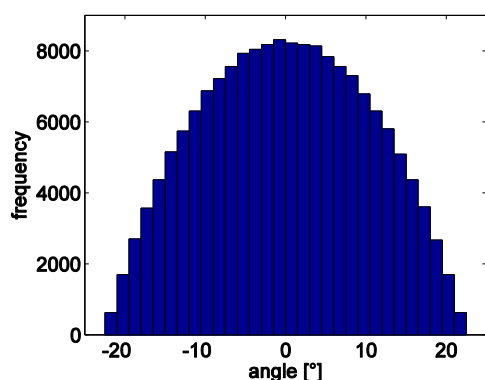


Figure S1 Distribution of the velocity components with respect to the X-ray beam. The distribution was determined by calculating the angle of the velocity field with respect to the direction of the X-ray beam.

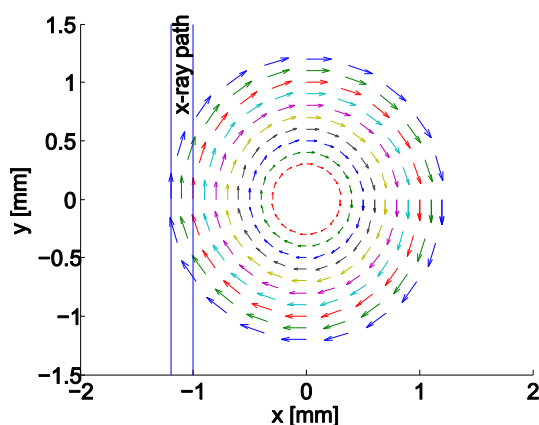


Figure S2 Flow field within the rheometer cell. Also the X-ray beam path is shown.

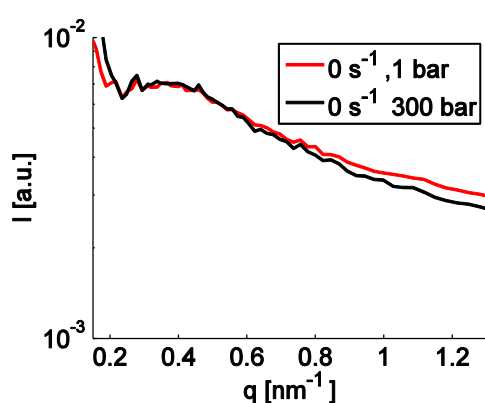


Figure S3 Scattering pattern of hyaluronan at 1bar (black) and 300bar (blue) scaled by a factor of 1.1. The curves show only minor differences indicating that the observed change is induced just by the changed contrast conditions.

Table S1 The shear rates used at the pressure of 1 bar, 200 bar and 300 bar.

Shear rates

0 s ⁻¹
0.1 s ⁻¹
0.21 s ⁻¹
0.41 s ⁻¹
0.81 s ⁻¹
1.61 s ⁻¹
3.21 s ⁻¹
6.41 s ⁻¹
12.81 s ⁻¹
25.61 s ⁻¹
51.21 s ⁻¹
102.41 s ⁻¹
204.81 s ⁻¹
409.81 s ⁻¹
819.21 s ⁻¹
1000 1 s ⁻¹
15001 s ⁻¹

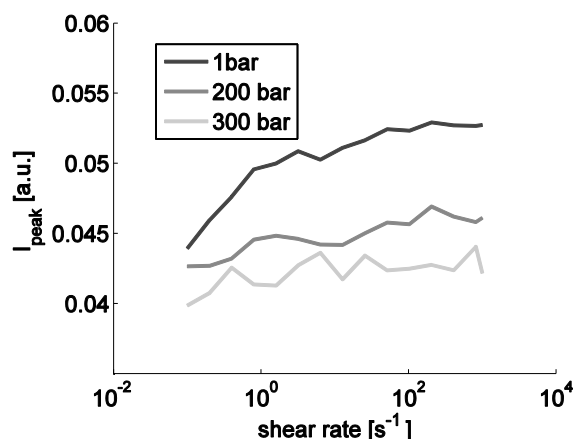


Figure S4 Comparison of the maximum of the polyelectrolyte peak as function of the shear rate for HA solutions with a concentration of 8 mg/mL without added salt at three different pressures. Changes due to increased pressure.

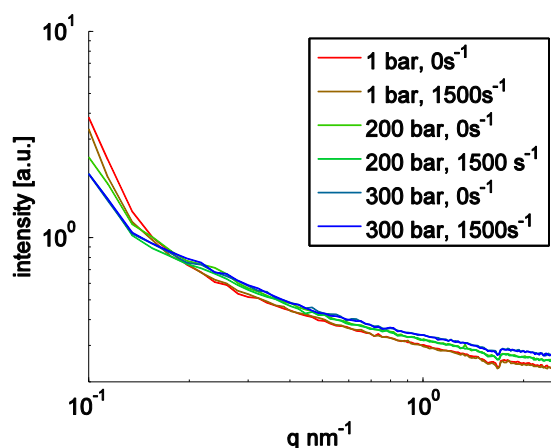


Figure S5 Scattering patterns of HA with added salt, 150 mM NaCl and 20 mM Hepes buffer at different pressures and shear rates. No structure factor can be observed due screened electrostatic interactions. Also no changes are observed within a shear experiment at a distinct pressure point.