Supplementary Information

Comment on "Bilayer aggregate microstructure determines viscoelasticity of lung surfactant suspensions" by C.O. Ciutara and J.A. Zasadzinski, Soft Matter, 2021, 17, 5170-5182

Jean-François Berret*
Université Paris Cité, CNRS, Matière et Systèmes Complexes, 75013 Paris, France

Outline

*Corresponding authors: jean-francois.berret@u-paris.fr
This version to be submitted to Soft Matter as a Comment to the paper: Clara O. Ciutara and Joseph A. Zasadzinski, Soft Matter **17**, 5170-5182 (2021)
This version: Wednesday, July 6, 22

Supplementary Information S1 – Strain and frequency sweeps from cone-and-plate rheometry on Curosurf® 80 g L^{-1}

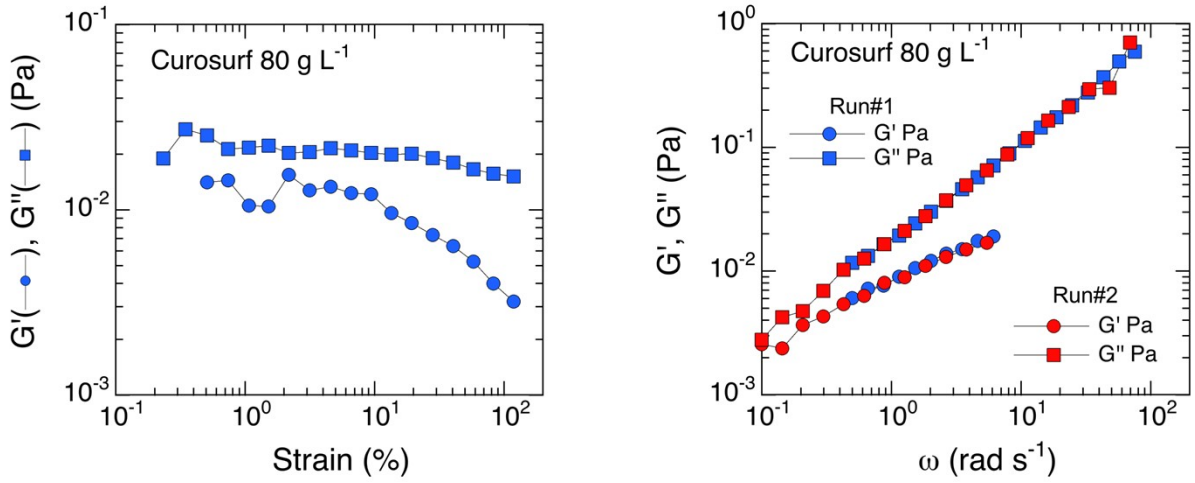

Figure S1: a) Variation of the storage and loss moduli of Curosurf® 80 g L^{-1} as a function of the strain obtained by cone-and-plate rheometry at the angular frequency of 1 rad s^{-1} (T = 25 °C). **b)** Frequency sweeps from cone-and-plate rheometry in two runs on the same sample of Curosurf® 80 g L^{-1} at the imposed deformation of 1% (T = 25 °C). The $G'(\omega)$-data at frequencies above 10 rad s^{-1} were suppressed because the elastic modulus decreased with increasing frequency.

Supplementary Information Figure S2 – Fluid-to-Gel transition from the Curosurf® phospholipid bilayer

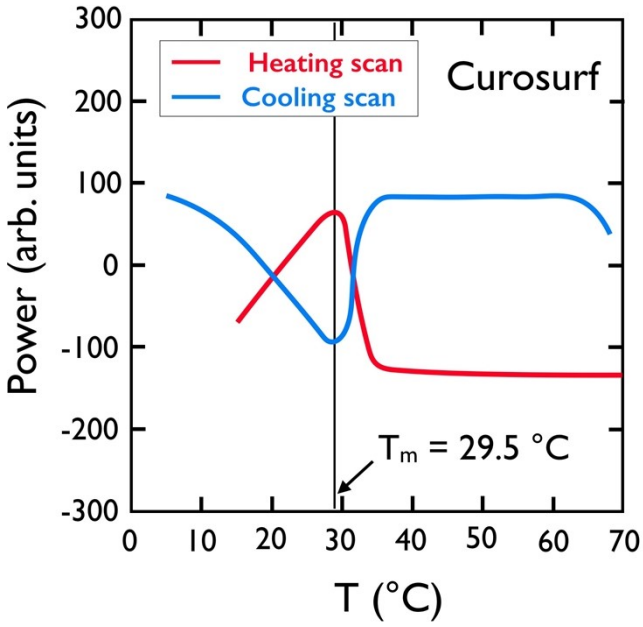

Figure S2: Thermograms of Curosurf® diluted in DI-water at 10 g L^{-1} obtained by differential scanning calorimetry. The Curosurf® bilayer melting temperature was estimated at T_m = 29.5 °C from heating and cooling cycles. Thermograms were measured using an N-DSCIII instrument from CSC. The reference cell was filled with DI-water and the sample cell (0.3 mL) with Curosurf®. The capillary cells were not capped and a constant pressure of 5×10^5 Pa was applied. The transition temperature was taken at the second, third and fourth heating scans, at a scan rate of 0.5 °C min^{-1} (from 5 to 70 °C). The melting temperature was estimated as the mean of the three transition temperatures mentioned before. The same procedure was applied with the cooling scans, which were performed in the same conditions (F. Mousseauet al., *Nanoscale*, 2017, **9**, 14967).

Supplementary Information S3 – Shear stress and viscosity *versus* shear rate for Curosurf® at 40 g L^{-1} and 80 g L^{-1} and at 25 °C and 37 °C using a cone-and-plate rheometer

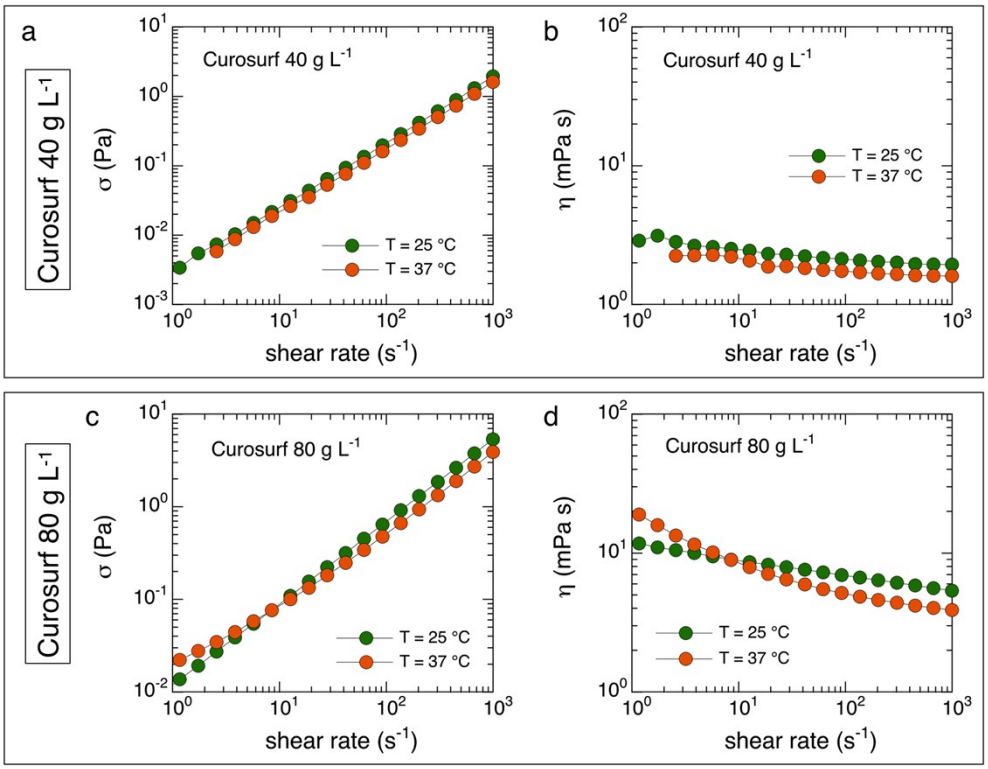

Figure S3: **a,b)** Shear stress and viscosity *versus* shear rate for Curosurf® 40 g L^{-1} at 25 °C and 37 °C respectively, as determined by cone-and-plate rheometry. **c,d)** Same as for **a,b)** for Curosurf® 80 g L^{-1}.