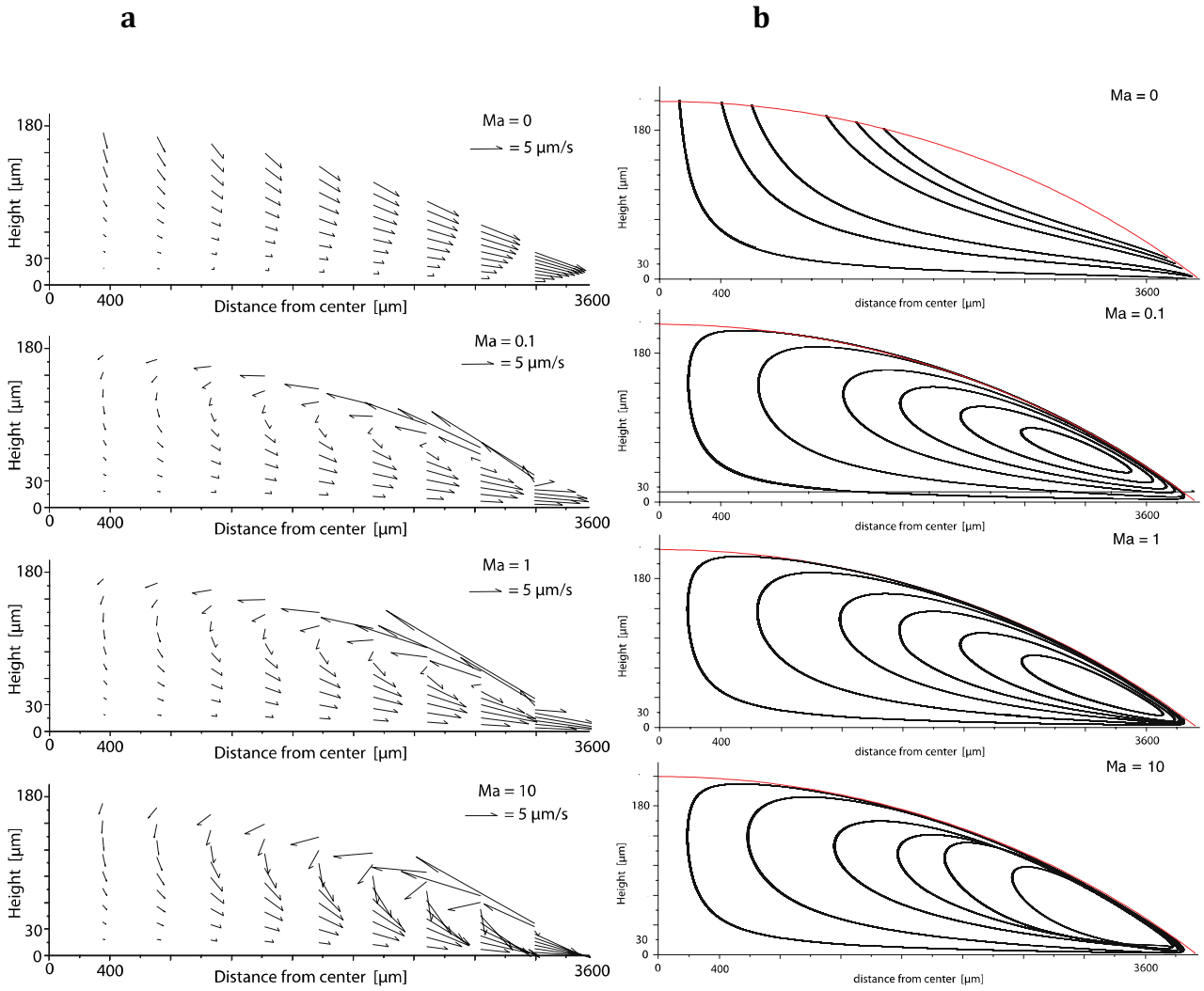
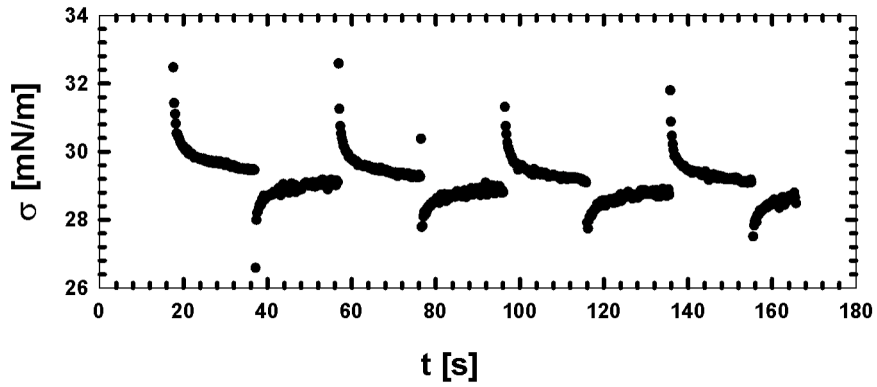


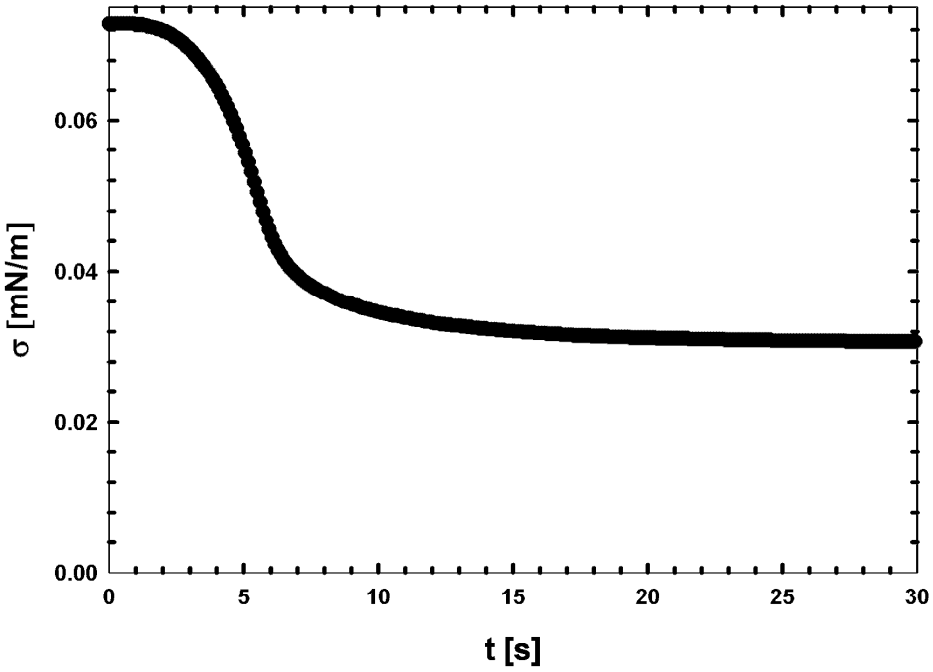
Supplementary Figure S1: Numerical simulations of internal flows in drying droplets.

The velocity profiles (**a**) and trajectories (**b**) of the internal flows inside drying droplets are predicted using an extension to the numerical model developed by Hu and Larson. The profiles are calculated for increasing surfactant concentration, as defined by an increasing Marangoni number (*Ma*). The case where *Ma* equals 0 simulates the absence of surfactants in the drying droplet.



Supplementary Figure S2: Dynamic surface tension measurement

Evolution of the surface tension of a 0.3 % w/v Triton X-100 droplet using the oscillating pendant drop method. The applied frequency is 0.05 Hz. The perturbations in adsorption of the surfactant - at the interface - level out over approximately 25 seconds. The evolution is independent of concentration in the regime well above the critical micelle concentration.



Supplementary Figure S3: Temporal evolution of the surface tension at the droplet interface.

Numerical calculation of the evolution in surface tension over time of a 0.3 % w/v Triton X-100 droplet. The initially empty interface (σ = 72.8 mN/m) becomes saturated (σ = 31 mN/m) by surfactant molecules on a timescale of approximately 20 seconds, under the assumption of diffusion as rate limiting step.

Supplementary Table S1: Surface tension measurements

T [°C]	MilliQ water σ [mN/m]	0,3 % w/v Triton X-100 σ [mN/m]
20	72.80	29.50
23	72.51	29.44
26	72.01	29.34
29	71.58	29.25
32	71.25	29.07

Surface tension measurements of MilliQ water and 0.3 % w/v Triton X-100 as function of temperature in the range of 20-32 °C.

Concentration (x10^6)[mol/l]	σ [mN/m]
2	61.73
8	44.57
15	40.46
35	31.97
70	29.49
500	29.68

Surface tension measurements of aqueous Triton X-100 solutions as function of concentration.