

Electronic Supplementary Information

Probing the dynamics and stability of micellar casein and para-casein dispersions with differential dynamic microscopy

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Results and Discussion

Characterization of the casein micelle dispersions

Compared to the values obtained by second cumulant analysis for the diffusion coefficient and the hydrodynamic radius of casein micelles (q -averaged $r_h = 126 \pm 4.6$ nm), the results of the first cumulant analysis and the stretched exponential method are shown in the following figures.

The q -averaged hydrodynamic radius calculated via single exponential decay analysis is $r_h = 144 \pm 5.9$ nm

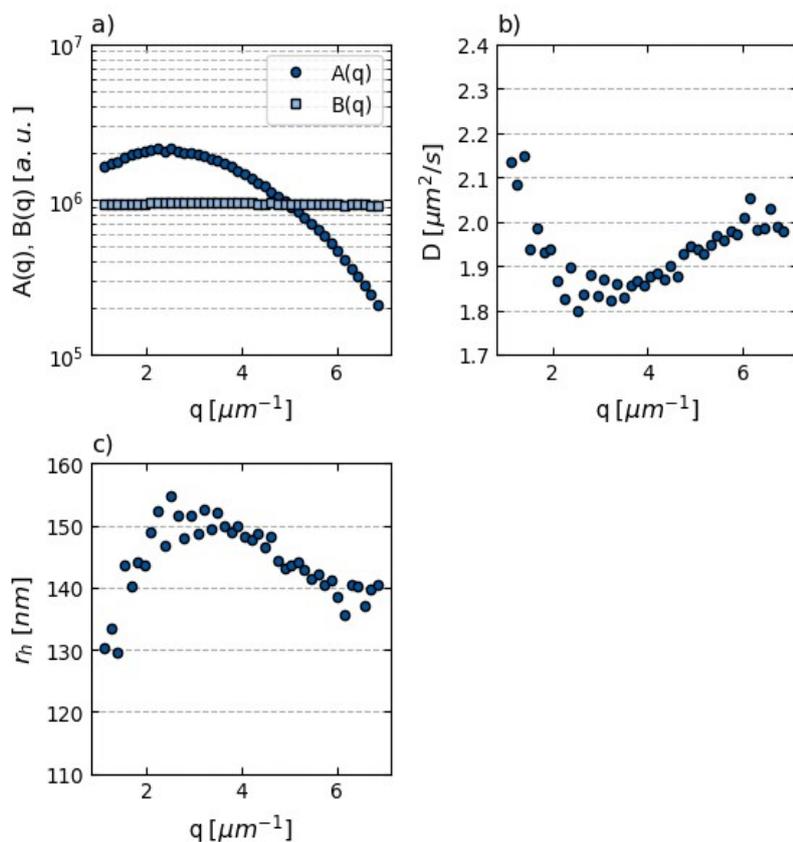


Figure S1: Amplitude $A(q)$ and noise $B(q)$ over q . (b) Diffusion coefficient obtained via single exponential decay analysis and (c) calculated hydrodynamic radius as a function of q .

The q -averaged hydrodynamic radius calculated via stretched exponential fitting is $r_h = 143 \pm 10.2$ nm.

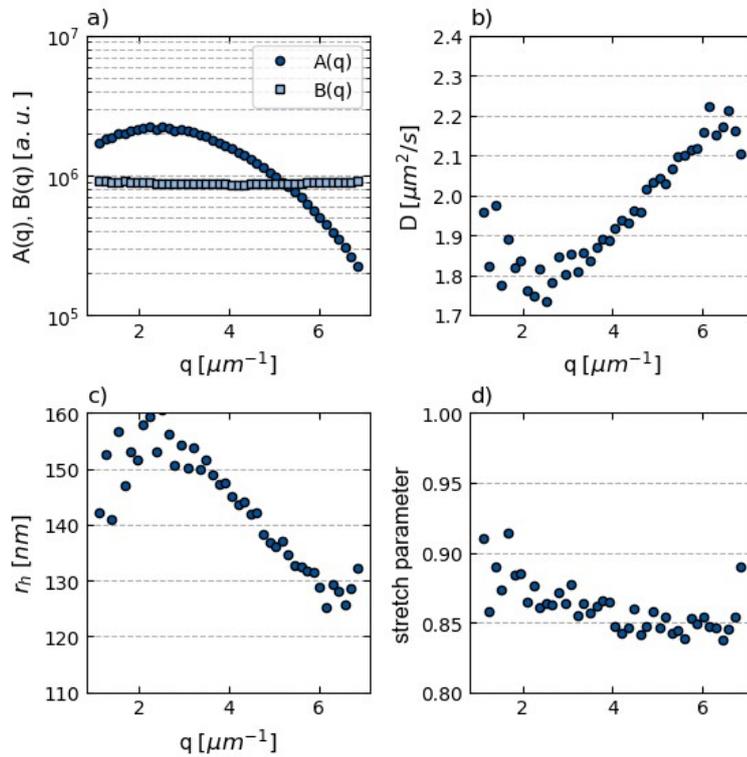


Figure S2: Amplitude $A(q)$ and noise $B(q)$ over q . (b) Diffusion coefficient obtained via stretched exponential analysis, (c) calculated hydrodynamic radius and (d) stretch parameter as a function of q .

Coagulation kinetics of p-CMs

Figure S3 and S4 display the temporal evolution of the hydrodynamic radius and the DDM amplitude during the aggregation of the para casein micelles over temperatures from 30°C to 45°C. Figure S5 illustrates the relative variation of the normalized amplitude at the selected temperatures of 37, 39 and 45°C.

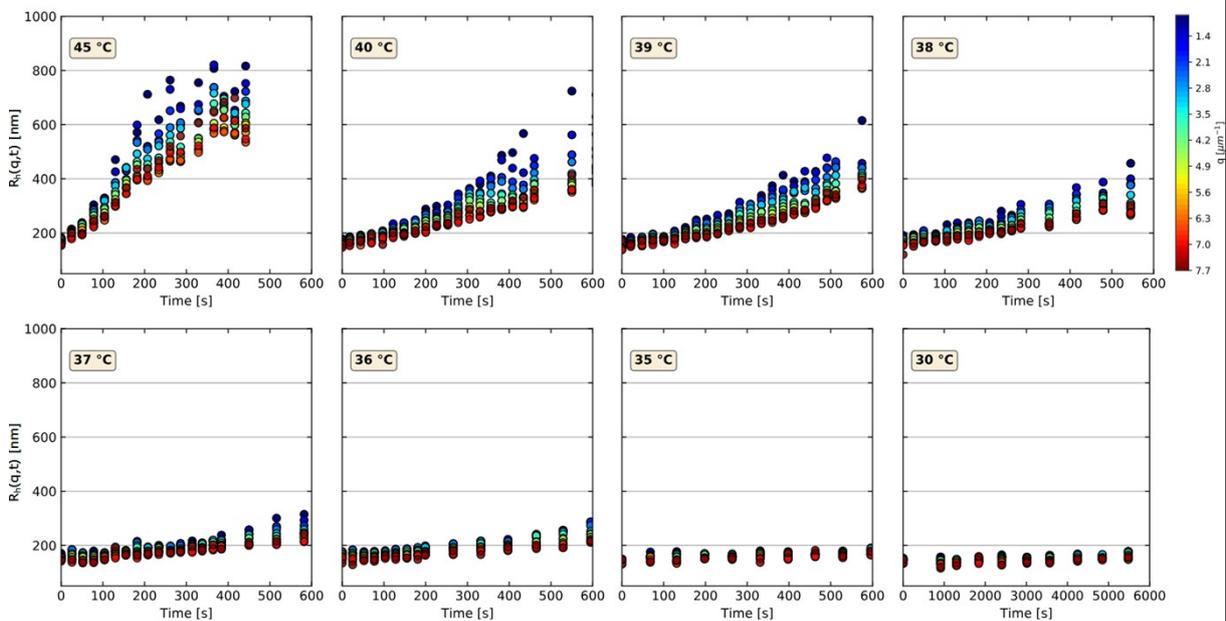


Figure S3: Temporal evolution of the hydrodynamic radius during the aggregation of the para-casein micelles.

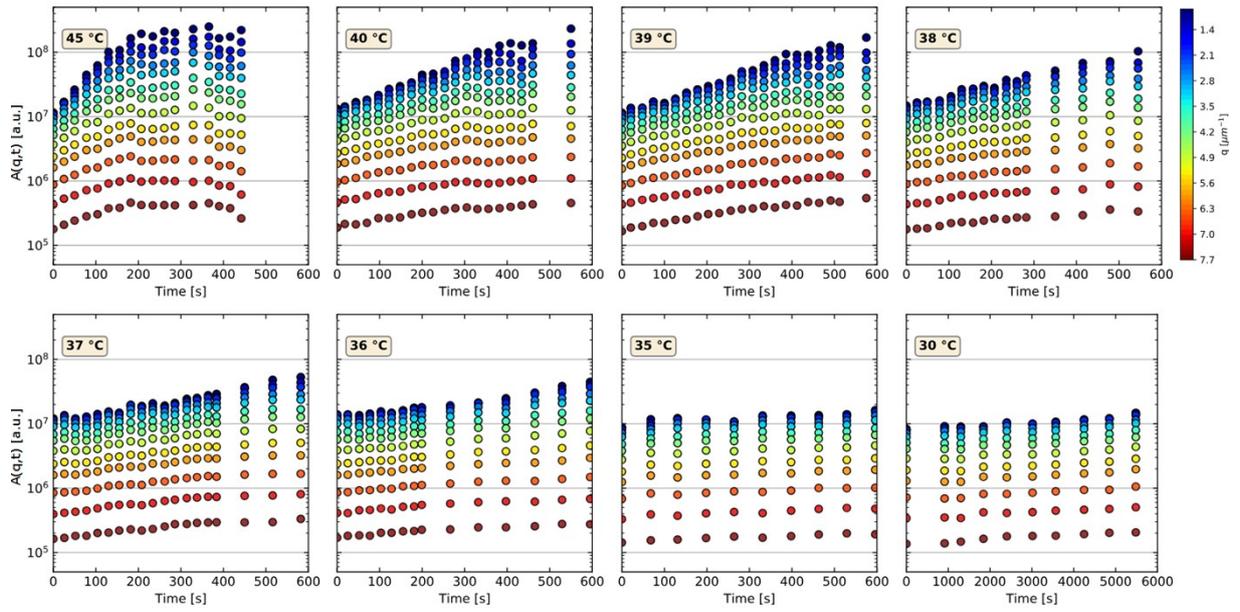


Figure S4: Temporal evolution of the DDM amplitude $A(q)$ during the aggregation of the para-casein micelles.

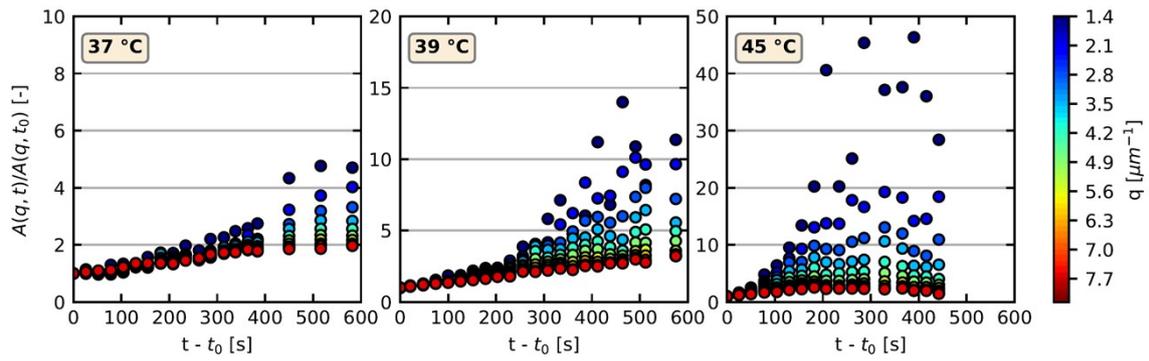


Figure S5: Temporal evolution of the DDM normalized amplitude $A(q,t)/A(q,t_0)$ during the aggregation of the para-casein micelles.