

## CONCEPT ON SELF-ASSEMBLY AND STRUCTURE OF GLOBULAR PROTEIN FLUIDS

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Globular proteins are ubiquitous in our daily life. Not only they are naturally present in the biological matter, they also offer many possibilities to adjust the nutritional and flow properties of fluids or to design drug vehicles [1]. Globular protein systems interact through short range attractive forces; and the interaction between them may lead the system to form aggregates through self-assembling process. Since such biological monomers are complex systems, their aggregation process is most of the time out of control. The current main conceptual framework to describe that process is based on the idea that the monomers may self-assemble through a diffusion and reaction mechanism known as DLA for diffusion limited aggregation, and RLA for reaction limited aggregation respectively [2]. Beta-lactoglobulin (blg) solution gives, after heat-induced denaturation, a suspension of polydisperse aggregates as predicted by the random aggregation concept. Therefore, the transition from native blg to denatured blg aggregate suspension leads to complex correlation with the flow behavior [3]. Although the dependency of the aggregation process to physicochemical factors like, ionic strength, pH, temperature and concentration has been intensively investigated, it still remains much to do to control the aggregate polydispersity via self-assembling process. The composition of the raw product, thermal processing, pH and entropy instability during the aggregation process, are some of the factors influencing the polydispersity of the aggregates. We use different techniques such as SAXS/USAXS, LS, SEM, CSLM and image analysis methods to characterize thoroughly the structure of globular protein aggregates formed after heat-induced denaturation at different experimental conditions [4]. Whether these aggregates are in solution or entrapped by gelation, we do think that investigating their structure will provide us with relevant information to solve the issue related to their formation.

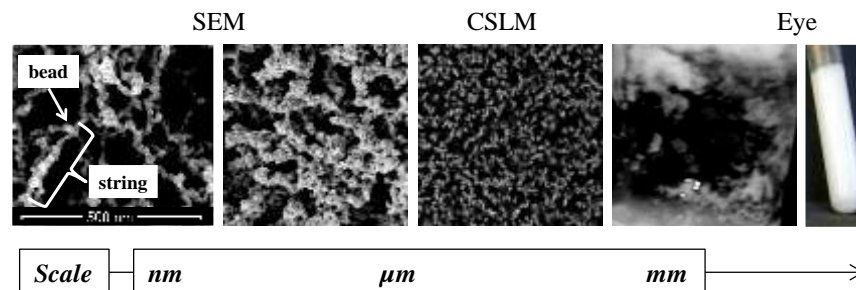


Figure 1- Pictures of globular protein solutions after heat-induced aggregation and gelation in different scales.

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