

Abstract Submitted
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Protein amyloid formation: Effects of shear, advection and interfaces DAVID POSADA, AMIR HIRSA, Rensselaer Polytechnic Institute — The aggregation of proteins into amyloid assemblies, which is associated with diseases such as Alzheimer's, is characterized by the unfolding of a given protein from its native state, the aggregation of some of these denatured species into nuclei, and further elongation into fibrils from these precursors. Previous observations have shown that shearing of the protein solution has a significant effect on the aggregation kinetics, but a clear understanding of the separate effects of shear forces, convective transport of species, and interfaces on the amyloid formation process is yet to be established. In the present work, we consider various shearing flow geometries and boundary conditions (e.g. gas/liquid and solid/liquid interfaces). The kinetics of the process are followed in time by measuring the change of protein in solution, and by microscopic observation of the aggregated species at the interfaces and in the bulk.

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