

VISCOSITY EFFECT ON PROTEIN SELF ASSEMBLY, CONFORMATIONAL CHANGE, AND AMYLOID FIBER FORMATION. Kathryn I. Holder, Samuel Breit, Jonathan Kucharyson, Vinit Shanbhag, Vishal Mhatre, Tiffany Teske, Shaohua Xu. Department of Biological Sciences, Florida Institute of Technology, 150 W. University Blvd, Melbourne, FL 32901.

Amyloids are linear fibers formed by the spontaneous self-assembly of proteins or protein fragments. While the presence of such fibers in patients with Alzheimer's and other amyloid diseases is well documented, the mechanism for the formation of the fibers is still unclear. Regardless of the protein sequence and native conformation, amyloid fibers have predominately cross-beta sheet structure. In this study, a circular dichroism spectrometer was used to establish at which point in the aggregation process does the protein shift from α -helix to β -sheet secondary structure and to what extent viscosity of the solution affects the aggregation. AFM and TEM images were obtained to monitor the fiber formation process. Fibers were formed by incubating lysozyme in glycerol/water solutions at 55°C, pH 2.5. The conformational change from α -helix to β -sheet started within 7 days and a stabilization of fibers in 40% glycerol was observed. Overall, this experiment provided significant insight into the fiber formation process.