Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Amyloid fibril formation at a uniformly sheared air/water interface DAVID POSADA, AMIR HIRSA, Rensselaer Polytechnic Institute — Amyloid fibril formation is a process by which protein molecules in solution form nuclei and aggregate into fibrils. Amyloid fibrils have long been associated with several common diseases such as Parkinson's disease and Alzheimer's. More recently, fibril protein deposition has been implicated in uncommon disorders leading to the failure of various organs including the kidneys, heart, and liver. Fibrillization can also play a detrimental role in biotherapeutic production. Results from previous studies show that a hydrophobic interface, such air/water, can accelerate fibrillization. Studies also show that agitation accelerates fibrillization. When attempting to elucidate fundamental mechanisms of fibrillization and distinguish the effects of interfaces and flow, it can be helpful to experiment with uniformly sheared interfaces. A new Taylor-Couette device is introduced for in situ, real-time high resolution microscopy. With a sub-millimeter annular gap, surface tension acts as the channel floor, permitting a stable meniscus to be placed arbitrarily close to a microscope to study amyloid fibril formation over long periods.

Amir Hirsa
Rensselaer Polytechnic Institute

Date submitted: 02 Aug 2013 Electronic form version 1.4