Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Birefringence Measurements of Spherulites formed in β-Lactoglobulin ERIC HARDIN, BRAD KIRKWOOD, JAZMINE LOMAN, ATHULA HERAT, Slippery Rock University, RIZWAN MAHMOOD, Slippery Rock University, KRISTIN DOMIKE, Wooster College — Many proteins have a propensity to aggregate into amyloid fibril containing spherulite-like structures. In some instances these spherulitic protein aggregates have been observed in people suffering from a number of neurodegenerative diseases, including Alzheimer's, Parkinson's, and Creutzfeldt-Jakob's. However, the exact role these aggregates play in the body, their internal structure, and the aggregation mechanism still remains a mystery. The model protein used in our study, β-lactoglobulin (BLG), produce spherulites under low pH and high temperature conditions. We report birefringence measurement on BLG using phase retardation method as a function of temperature. Birefringence ($\sim$0.0022 $\pm$ 0.0002) data suggest very weak ordering within the spherulites. These spherulites seem to disappear when we added an extensively studied thermotropic liquid crystal [4'-pentyl-4-cyanobiphenyl (5CB)] in β-Lactoglobulin + water+ hydrochloric acid. Our preliminary data suggests that the strong interaction energy between the two systems may lead to the destruction of spherulites.

Eric Hardin
Slippery Rock University

Date submitted: 23 Nov 2008 Electronic form version 1.4