

Abstract Submitted  
for the MAR16 Meeting of  
The American Physical Society

**Rheology of clustering protein solutions** STEVEN HUDSON, NIST, VISHNU DHARMARAJ, Montgomery Blair High School, P. DOUGLAS GODFRIN, MIT, YUN LIU, NIST — Here we explore the rheology of low-salt lysozyme solutions, with special interest in the extremes of high concentration and low temperature. Under these conditions, reversible clustering of protein governed by their competing short-range attraction and long-range repulsion markedly enhances viscosity. Even in these conditions, the solutions exhibit Newtonian behavior over a wide range of shear rates. To test for departures from Newtonian behavior, we examined still higher shear rates. At shear rates in excess of 10,000 /s, we find reversible shear thinning at 40 % mass fraction. These results reveal dynamics of the protein clusters and are compared with other measurements of solution dynamics by neutron spin echo scattering and dynamic light scattering.

Steven Hudson  
NIST

Date submitted: 06 Nov 2015

Electronic form version 1.4