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Dynamic clusters in highly concentrated lysozyme solutions S.D. HUDSON, NIST, P.D. GODFRIN, U. Delaware, L. PORCAR, P. FALUS, ILL, K. HONG, ORNL, N.J. WAGNER, Y. LIU, U. Delaware — New biologic drugs need to be highly concentrated to have the required dosage for injection. Such high concentrations pose challenges for solution viscosity and stability. We therefore have studied the viscosity and dynamic clustering behavior of concentrated (up to 500 mg/mL) lysozyme solutions. Cluster dynamics are measured by neutron spin echo scattering experiments, which yield the mutual diffusivity. Viscosity is measured with a miniature capillary viscometer. While static scattering indicates cluster-like organization, the dynamic measurements show that these are momentary and do not survive local diffusion times. At high concentrations, they persist and diffusivity and viscosity dramatically increase.

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