Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

High shear rate capillary rheology of rod-like viruses STEVE KUEI, PAUL SALIPANTE, RYAN MURPHY, KATHLEEN WEIGANDT, STEVEN D. HUDSON, National Institute of Standards and Technology — Complex fluids composed of long filaments, such as many polymeric and worm-like micellar fluids, undergo significant microstructural changes as they are sheared, resulting in strong shear thinning behavior, shear banding, and other flow instabilities. In order to simultaneously measure structural changes and flow properties, we use capillary rheo-SANS to study solutions of Fd bacteriophage, a model rod-like fluid system. As we push towards very high shear rates, we measure the dependence of microstructural quantities, such as pair correlations and rotational diffusion coefficients, on shear rate, flexibility, and other factors, and aim to connect them to the fluid's rheological properties.

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Date submitted: 10 Aug 2020 Electronic form version 1.4