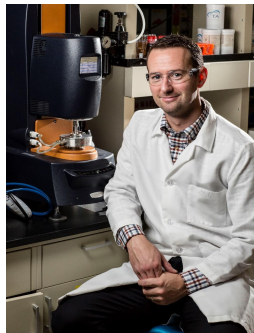


**Fall 2021 Amgen Seminar Series in Chemical Engineering  
December 2<sup>th</sup>, 2021**

**Zoom Virtual Seminar: <https://uri-edu.zoom.us/j/95080747056>**



**“A Material’s Perspective: Developing a Transient Framework for Understanding Nonlinear Rheological Responses”**

Dr. Simon Rogers  
Department of Chemical and Biomolecular Engineering  
University of Illinois, Urbana-Champaign

In this talk, I will present a rheological framework for understanding yield stress fluid rheology that is commensurate with recent rheo-SANS studies of self-assembled soft systems. The new approach describes responses in terms of instantaneous recoverable and unrecoverable strains that can be determined by iteratively performing constrained recovery steps during traditional rheological characterizations. I will show how the results of these new experiments elucidate the physics underlying yield stress fluid phenomena, and also provide insight into the phenomenon of mechanical memory observed in colloidal glasses, emulsions, and foams. The lessons learned from these experimental results have led to the development of a simple rheological model that accurately predicts yield stress fluid behavior across a wide range of situations. The new model does not contain features that have been considered crucial to understanding yield stress fluids, and yet does a better job of describing real behaviors than current state-of-the-art models. Taken together, these studies are providing a rational route toward understanding and designing structure-property-processing relationships for yield stress fluids.

**Bio:**

Simon A. Rogers is an Assistant Professor in the Department of Chemical and Biomolecular Engineering at the University of Illinois at Urbana-Champaign. Dr. Rogers uses experimental and computational tools to understand and model advanced colloidal, polymeric, and self-assembled materials. He joined the department in 2015. He received his BSc in 2001, BSc (Hons) in 2002; and his PhD from Victoria University of Wellington in New Zealand in 2011. He completed his postdoctoral research at the Foundation for Research and Technology in Crete, the Jülich Research Center in Germany, and the Center for Neutron Research at the University of Delaware.

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