Bioengineering Faculty Search, College of Engineering, University of Toledo

Complex Fluids: Nanomaterial Properties Control Bulk Dynamics

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Complex fluids are everywhere: they include suspensions, emulsions, dispersions, and foams. A few examples in biological systems include blood, liquid pharmaceuticals, and even bacterial biofilms. Regardless of locale, the characteristics and dynamic properties of complex fluids on the macroscopic scale arise from their microstructure and constituent nanoparticle properties. In this talk, I will present an in-depth study of the influence of nanoparticle properties on bulk suspension characteristics. As a case study, we will investigate suspensions of asphaltenes, naturally occurring molecules found in petroleum, which can cause clogging in even the largest pipelines. A combination of various non- the fundamentals of asphaltene background alkane solvents, these charged mo phase separate out of solution. At the same time characteristics of asphaltenes allows us to contr surfactant additives. In particular, we will see influences macroscopic dynamics sedimentatio discuss implications of the principle "microscale pr problems in bioengineering.

Where: SSOE Seminar Room, NI 1027 Friday,