



University at Buffalo

Department of Chemical
and Biological Engineering

School of Engineering and Applied Sciences

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Diffusion and Stability of Magnetic Nanoparticles in Complex and Biological Fluids

Magnetic nanoparticles are of interest in a variety of applications that take advantage of their manipulation using externally applied magnetic fields. In this talk I will summarize our recent work on characterizing the diffusion and stability of magnetic nanoparticles in complex and biological fluids through their response to time-varying magnetic fields. I will discuss the physical principles of this measurement technique and then demonstrate how quantitative measurements can be made accurately in simple fluids. Then I will show results for nanoparticles suspended in complex fluids, such as gelling solutions, polymer solutions, and polymer melts. Finally, I will present results for measurements of magnetic nanoparticle rotational dynamics in biological fluids, as a means of studying protein adsorption, concentrated protein solutions, and nanoparticle behavior in tissues and blood.

Wednesday Seminar Series