LadHyX Seminar – April 30, 10:45

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Active particles in complex fluids

Abstract

Active particles are self-driven objects, biological or otherwise, which convert stored or ambient energy into systematic motion. The motion of small active particles in Newtonian fluids has received considerable attention, with interest ranging from phoretic propulsion to biological locomotion, whereas studies on active bodies immersed in complex fluids are comparatively scarce. In this talk I will discuss a theoretical formalism for understanding the motion of active particles in fluids of arbitrary rheology and then discuss the effects of viscosity gradients, viscoelasticity and shear-thinning rheology in the context of biological locomotion and the propulsion of colloidal Janus particles.

Short bio

Gwynn Elfring is an Associate Professor in the Department of Mechanical Engineering and the Institute of Applied Mathematics at the University of British Columbia, and recently a Visiting Associate in the Division of Chemistry and Chemical Engineering at the California Institute of Technology. His group at UBC conducts research on biological locomotion and fluid-body interactions in complex fluids and interfaces. Previously, he completed a Ph.D. at the University of California San Diego under the supervision of Eric Lauga and postdoctoral studies with L. Gary Leal and Todd M. Squires at the University of California Santa Barbara.