Thesis Defense in Chemistry

Friday, September 15, 2017 at 11:00am
Room 209 Havemeyer

Active Matter: Choreography at the Colloidal Scale

Presented by Joseph Harder, Cacciuto Group

Artificial micro-swimmers are colloidal particles that take energy from chemical reactions and generate persistent motion in one direction. These particles are studied as model systems for the swarming and collective behavior of living organisms, and are used for cargo transport, enhanced self-assembly, and as power sources for 'smart' micro-machines. I present numerical simulations that explore how interactions between self-propelled particles and various types of passive colloidal components lead to interesting and useful collective motion. Ultimately, relatively simple principles arising from the physics of self-propelled particles teach us how to make 'dumb' micro-swimmers behave in ways that approximate living systems.

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