Seminar/Talk

Soft Matters: Carving non-equilibrium pathways to control self-assembly

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Host: Scott Waitukaitis

Active particles are microscopic particles, which can inject energy locally and were made available by recent progress in colloidal science. They are ideal "pump-probes" to explore the emergent properties in soft systems powered from within or control and direct self-assembly at the microscale.In this talk, I will first show how active particles added to a material can regulate its activity internally and boost the annealing of a colloidal monolayer [1]. It opens a broad range of novel opportunities to thermal treatments, where the properties of matter are not controlled macroscopically but microscopically and in real time by active dopants.Next, I will introduce a new type of self-assembly through a novel approach to devise spinning microrotors that self-assemble and synchronize, from a single type of building block a colloid that self-propels. Using photo-active particles and light patterns, I will demonstrate the potential of non-equilibrium (phoretic) interactions to program self-assembly and control dynamical colloidal architectures [2]. It shows that, as in living systems, non-equilibrium processes hold the key to the realization of synthetic machines from machines.

Monday, February 10, 2020 09:00am - 10:00am
Mondi Seminar Room 2, Central Building

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