

Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Out-of-Equilibriumness of Light Activated Colloids JEREMIE PALACCI, CSMR, N, STEFANO SACANNA, CSMR, NYU, USA, ASHER PRESKA-STEINBERG, Brandeis University, USA, DAVID PINE, PAUL CHAIKIN, CSMR, NYU, USA — Self-propelled micro-particles are intrinsically out-of-equilibrium. This renders their physics far richer than that of passive colloids while relaxing some thermodynamical constraints and give rise to the emergence of complex phenomena e.g. collective behavior, swarming... We will present a new form of self-assembly originating from non-equilibrium driving forces. When activated by light, a set of new self-propelled particles spontaneously assemble into living crystals which behaves as “self-propelled colloidal carpets” steerable with an external magnetic field. We will show that this phenomenon is intrinsically out-of-equilibrium and originates in the competition between self-propulsion, particles collisions and attractive interactions. We will also present surprising behaviors of these particles in confined environments.

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Date submitted: 01 Aug 2012

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