

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Active colloids that slosh through passive matrices. JIE ZHANG, University of Illinois at Urbana-Champaign, STEVE GRANICK, IBS Center for Soft Living Matter — Studies of natural and artificial active matter have focused on systems with a large mismatch of the time and length scales for active and passive elements, but in a variety of non-equilibrium condensed matter systems, including numerous biological processes, actively driven elements have a crowded environment of surrounding passive “solvent” elements of comparable size. Here we study self-propelled colloidal particles in a passive matrix of comparable size. Particles with high activity take straight lines and sharp turns through the soft 2-D crystal matrix to ensure rapid healing of the crystal structure. Effective attraction between active particles arises when the concentration of active particles or the hardness of the matrix increases; active particles tend to segregate in the grain boundaries of the crystal matrix.

Jie Zhang
University of Illinois at Urbana-Champaign

Date submitted: 05 Nov 2015

Electronic form version 1.4