Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

From microscopic rules to macroscopic dynamics with active colloidal snakes. JIE ZHANG, JING YAN, University of Illinois at Urbana-Champaign , STEVE GRANICK, Center for Soft and Living Matter, Institute for Basic Science, South Korea — Seeking to learn about self-assembly far from equilibrium, these imaging experiments inspect self-propelled colloidal particles whose heads and tails attract other particles reversibly as they swim. We observe processes akin to polymerization (short times) and chain scission and recombination (long times). The steady-state of dilute systems consists of discrete rings rotating in place with largely quenched dynamics, but when concentration is high, the system dynamics share features with turbulence. The dynamical rules of this model system appear to be scale-independent and hence potentially relevant more generally.

Jie Zhang
University of Illinois at Urbana-Champaign

Date submitted: 27 Dec 2016 Electronic form version 1.4