

Abstract Submitted
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Helical Assembly of Janus Particles JONATHAN WHITMER, Department of Physics, University of Illinois at Urbana-Champaign, QIAN CHEN, SHAN JIANG, SUNG CHUL BAE, STEVE GRANICK, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, ERIK LUIJTEN, Department of Materials Science and Engineering and Department of Engineering Sciences and Applied Mathematics, Northwestern University — Amphiphilic Janus particles, which have hydrophobic and hydrophilic hemispheres, assemble into a variety of clusters depending on salt concentration and particle volume fraction. At low salt concentration, repulsion due to surface charges keeps cluster sizes small, whereas at higher salt concentrations beautiful elongated helices of tetrahedra emerge. We demonstrate that the emergence of these helical structures is a nonequilibrium effect, and that kinetic selection drives formation of polytetrahedral shapes relative to polyhedral shapes which are entropically more favorable.

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