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Assembling Colloidal Clusters from Spherical Codes¹ CAROLYN PHILLIPS, ERIC JANKOWSKI, MICHELLE MARVAL, SHARON GLOTZER, University of Michigan — Anisotropic building blocks assembled from colloidal particles are attractive building blocks for self-assembled materials because their complex interactions can be exploited to drive self-assembly. In this work we consider the thermodynamically driven self-assembly of terminal clusters of particles. We predict that clusters related to spherical codes, a mathematical sequence of points, can be synthesized via self-assembly. These anisotropic clusters, which derive from packing solutions of spheres around a sphere, can be tuned to different anisotropies via the ratio of sphere diameters and temperature. Structural and dynamical analysis of these tiny systems reveal rich and sometimes surprising properties.

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