

Abstract Submitted  
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**Polyhedral assembled colloids (PACs); a new family of colloids with facets** NOBUHIRO YANAI, JING YAN, QIAN CHEN, STEVE GRANICK, University of Illinois at Urbana Champaign — We introduce a new class of colloids with polyhedral morphology that self-assemble into well-defined clusters and crystals by means of directional attraction between facets. These micron-sized particles are prepared by controlled crystallization of metal ions and organic bridging ligands in solution. They are characterized by distinct polyhedral morphology, rhombic dodecahedra in this work. Unlike spheres that isotropically interact along a curved surface, rhombic dodecahedra particles in suspension associate in a directional facet-to-facet fashion, forming clusters whose elemental units are orderly not only in interparticle distance but also mutual orientation. Furthermore, by changing the particle concentration during the self-assembly, we observe two types of hexagonal arrangement of these rhombic dodecahedra.

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