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Dynamic of Faceted Colloidal Clusters MELINDA SINDORO, AH-YOUNG JEE, CHANGQIAN YU, STEVE GRANICK, University of Illinois, Urbana-Champaign — We study the emulsion induced clustering of faceted metal organic frameworks (MOFs) and their dynamics. Our approach to anisotropic building block is through the rational synthesis of water stable and highly uniform MOFs. This generates colloidal-sized MOFs of defined polyhedral shape with tunable size in micrometer range that are suitable for in situ imaging. The 3D clusters formations are promoted by hydrophilic MOFs particles confined in aqueous droplets of binary water-lutidine mixture at transition temperature. Below this temperature, the water droplet decreases in volume due to one phase mixing with lutidine which forces the N -mers of faceted particles to aggregate in close contact. We compare the faceted clusters formed to those made of spherical particles in term of the building block sphericity. Other focus of our study involves the dynamic of the clusters. We found that, unlike spherical clusters, these faceted N -mers are highly stable on large scale of temperature due to their dominant capillary force on their facet-to-facet contact.

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