

Abstract Submitted
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Controlling the size distribution of self-assembled colloidal clusters¹ NICHOLAS SCHADE, Harvard Department of Physics, JESSE COLLINS, JONATHAN FAN, MIRANDA HOLMES-CERFON, Harvard SEAS, VINOTHAN MANOHARAN, Harvard Department of Physics — Using a combination of experiment and simulation, we investigate the structures that form when spherical colloidal particles cluster around spheres of different sizes in a binary mixture. We use either oppositely charged particles or particles coated with complementary DNA sequences to form the clusters. Using optical microscopy, we examine the effect of the stoichiometric ratio, the size ratio, and the type of interaction on the distribution of clusters. These parameters serve as useful control mechanisms for the synthesis of nanostructures with tunable properties. For example, a high density of tetrahedral clusters of metallo-dielectric spheres could be used to create a bulk, isotropic metamaterial.

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