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Abstract for an Invited Paper
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DNA-mediated self-assembly of polyhedral plasmonic clusters

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A metafluid is a collection of electromagnetic resonators that have an isotropic response to incoming light. Because the resonators need not be oriented in any particular direction, metafluids are perhaps the simplest metamaterial to fabricate – if one can first design resonators with an isotropic response. Such structures can in principle be self-assembled from metallic colloidal particles. The challenge is to organize these 100-nm-scale metallic particles into high-symmetry clusters, such as tetrahedra, that have very little variability between structures, so that the electric and magnetic resonances of all the clusters are at the same frequency. I will discuss how DNA can be used to assemble bulk suspensions of polyhedral colloidal clusters, using both equilibrium and non-equilibrium methods². I will also discuss how the yield of the structures is related to statistical mechanical and geometrical considerations.

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²Schade, Holmes-Cerfon, Chen, Aronzon, Collins, Fan, Capasso, Manoharan, *PRL* 148303 (2013)