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**Anisotropic Packing of DNA-Mediated Colloidal Self-Assembly**
THI VO, Chemical Engineering, Columbia University, FANG LU, YUGANG ZHANG, OLEG GANG, Center for Functional Nanomaterials, Brookhaven National Lab, SANAT KUMAR, Chemical Engineering, Columbia University — The self-assembly of DNA-grafted nanoparticles has garnered considerable interest in recent years. However, many efforts focused on the usage of spherical nanoparticles, which limits us to the formation of only a handful of crystal lattices. Recent advances in the synthesis of non-spherical particles have directed attention towards the usage of these anisotropic particles for self-assembly. Here we combine experiments and theory on a series of DNA-grafted nanocubes. Our studies indicate that anisotropy not only directs where DNA linkers graft onto the particle but also affects how they pack and orient within a lattice, giving rise to both a preferential attachment effect and orientation-directed self-assembly. These results emphasize anisotropic self-assembly as a powerful new tool that allows for precise and directed control of nanoparticle self-assembly.

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