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Assembly of DNA-Linked Nanoscale Platonic Solid[1] FANG LU, YUGANG ZHANG, DANIEL VAN DER LELIE, OLEG GANG — A self-assembly strategy based on DNA-hybridization has been demonstrated as a promising platform for creation new types of materials via incorporating the nano-particles functionalities into well-define structures. However, the phase behavior dependence of such systems on the nanoparticles geometric anisotropy has not been explored yet. Here we report a study on assembly and packing of three kinds of nanoscale objects with shapes of platonic solids, including cubes, octahedral and rhombic dodecahedrons. Via DNA-linker-assisted programmable assembly, three-dimensional superlattices of DNA-capped nano-objects have been formed and probed using in-situ structural and spectroscopic methods. The superlattices can exhibit phase transformations, which are not attainable for systems built from spherical objects. The correlation between particle geometric anisotropy and the kinetics of phase formation has been also investigated.

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