

Abstract Submitted
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Particle Assembly with Double-Helix DNA DAZHI PETER SUN, Center for Functional Nanomaterials, Brookhaven National Lab, ANDREA STADLER, DANIEL VAN DER LELIE, Biology Department, Brookhaven National Lab, OLEG GANG, Center for Functional Nanomaterials, Brookhaven National Lab, BROOKHAVEN NATIONAL LAB TEAM — The use of DNA-functionalized particles and DNA motifs for programmable assembly has been extensively studied in the past decade. However, the majority of the previous successful efforts have been based on a paradigm in which a hybridization of single-stranded DNA(ssDNA)-functionalized particles is utilized to group particles into clusters or large scale assemblies. Here, we report a novel strategy that allows for controllable and programmable assembly of double-stranded DNA (dsDNA)-modified nanoparticles using molecular intercalators. Transmission electron microscopy (TEM), Atomic Force Microscopy (AFM) and dynamic light scattering (DLS), applied to assembled structures, confirm successful assembly of designed clusters using this approach. The efficiency of assembly and thermodynamic properties of formed structures have been also studied. The presented approach is broadly applicable to varieties of existing DNA-based nano-architectures and might provide a platform for development of novel assembly motifs. The potential utility of our approach for a fabrication of complex structures will be also discussed.

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