

Abstract Submitted
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Tuning Lattice Spacing in DNA-Mediated Assembly of Nanoparticle Superlattices¹ DMYTRO NYKYPANCHUK, OLEG GANG, Brookhaven National Laboratory, MATHEW MAYE, Syracuse University, ALEXEI TKACHENKO, Brookhaven National Laboratory — DNA encoding of nanoparticles allows for assembly of well-defined superlattices in which the particle relative positions are defined by recognition interactions and DNA length. DNA connectivity in such superlattices provides for structure responsiveness and tunability via application of various stimuli. Here we discuss (i) the effect of changing electrostatic interactions between DNAs and (ii) application of osmotic pressure to tune the structure of the DNA/nanoparticles superlattices. Using these two approaches a lattice parameter can be tuned within tens of nanometers while preserving the long range order and integrity of assembled structures. The observed structure variations, probed by Small Angle X-ray Scattering, are in a reasonable agreement with estimations which account for changes of excluded volume and DNA persistent length under the applied stimuli.

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