Abstract Submitted
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Phases and Dynamics of Self-Assembled DNA Programmed Nanocubes[1] CHRISTOPHER KNOROWSKI, Department of Physics and Astronomy and Ames Laboratory, Iowa State University, Ames, IA, ALEX TRAVESSET, Iowa State University Department of Physics and Astronomy and Ames Lab DOE — Systems of Nanoparticles grafted with complementary DNA strands have been shown to self-assemble into an array of superlattices. In this talk, we extend our previous model [1], which successfully predicted equilibrium phases and dynamics of assembly for spherical Nanoparticles [1,2] without fitting parameters, to the case of nanocubes. We show that the phase diagram consists of bcc and sc lattices, depending on DNA length. The bcc lattices are either rotator and orientational glass or cubatic. For temperatures above the DNA melting temperature, the system is equivalent to f-star polymer systems, and consist of bcc, also with rotator, orientational glass or cubatic orientational order as well as sc. We also provide a characterization of the dynamics, including the role of topological defects in crystal nucleation and growth.

[1] C. Knorowski *et al.*, Phys. Rev. Lett. **106**, 215501 (2011)
[2] C. Knorowski and A. Travesset, Soft Matter. **Advance Article** (2012) DOI: 10.1039/c2sm26832a

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