

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Rational Self-Assembly of Nano-Colloids using DNA Interaction MARIE T. UNG, RAYNALDO SCARLETT, TALID R. SINNO, JOHN C. CROCKER, Department of Chemical and Biomolecular Engineering, University of Pennsylvania, Philadelphia, PA — DNA is an attractive tool to direct the rational self-assembly of nano-colloids since its interaction is specific and reversible. This tunable attractive interaction should lead to a diverse and rich phase diagram of higher ordered structures which would not otherwise be entropically favored.¹ We compare our latest experimental observations to a simulation framework that precisely replicates the experimental phase behavior and the crystal growth kinetics.² We will discuss the crystallography of novel structures and address how particle size and heterogeneity affect nucleation and growth rates.

¹Tkachenko AV, Morphological Diversity of DNA-Colloidal Self-Assembly, Phys. Rev. Lett 89 (2002)

²Kim AJ, Scarlett R., Biancaniello PL, Sinno T, Crocker JC, Probing interfacial equilibration in microsphere crystals formed by DNA-directed assembly, Nature Materials 8, 52-55 (2009)

Marie T. Ung
Department of Chemical and Biomolecular Engineering,
University of Pennsylvania, Philadelphia, PA

Date submitted: 25 Nov 2009

Electronic form version 1.4