Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

The importance of repulsion in the aggregation-dissociation behavior of DNA coated colloids REMI DREYFUS, MIRJAM LEUNISSEN, ROUJIE SHA, NADRIAN SEEMAN, DAVID GRIER, DAVID PINE, PAUL CHAIKIN, New York University — Coating particles with DNA gives excellent control over the specificity, strength and range of their interactions. In our experiments, a pair of complementary 'Watson-Crick' sequences is used to obtain thermoreversible binding of different colloids. Colloids coated with such complementary 'sticky' DNA aggregate when they are mixed together, the aggregates dissolve again when they are heated. We investigate the melting behavior of colloids coated with both sticky and non-sticky DNA. By changing the ratio between the sticky and non-sticky DNA, the obtained melting curves have very different melting temperatures, but almost the same sharpness. We show that the sharpness does not change because a high number of bonds bridges the particles, and that the strong shift in melting temperature is due to a repulsive interaction induced by the confinement of the non-sticky DNA when the particles come close together.

Mirjam Leunissen
New York University

Date submitted: 21 Nov 2007 Electronic form version 1.4