

Abstract Submitted
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Kinetics and Thermodynamics of the Association of DNA Coated Colloids KUN-TA WU, FENG LANG, Center for Soft Matter Research, New York University, RUOJIE SHA, Chemistry Department, New York University, REMI DREYFUS, Complex Assemblies of Soft Matter, CNRS-Rhodia-UPenn UMI 3254, NADRIAN SEEMAN, Chemistry Department, New York University, PAUL CHAIKIN, Center for Soft Matter Research, New York University — We have investigated the aggregation kinetics and thermodynamics of complementary DNA coated particles as a function of DNA coverage. The streptavidin on our particles can accommodate 69800 biotinalated DNA which has 50 base pair double strands and 11 base sticky ends. For full 100% coverage, the melting temperature, T_m , is 50.3 C. The transition width, ΔT , is 0.8 C, and the characteristic aggregation time, τ , is 4 minutes. For 2.5% (40 times less) coverage $T_m = 22$ C, $\Delta T = 5$ C, and $\tau = 11$ hours. A simple model which takes into account the number of DNA bonds and the multiplicity of their arrangements accounts for the full time and temperature dependence of the particle aggregation.

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