

Supplementary figures for Flying Colloidal Carpets

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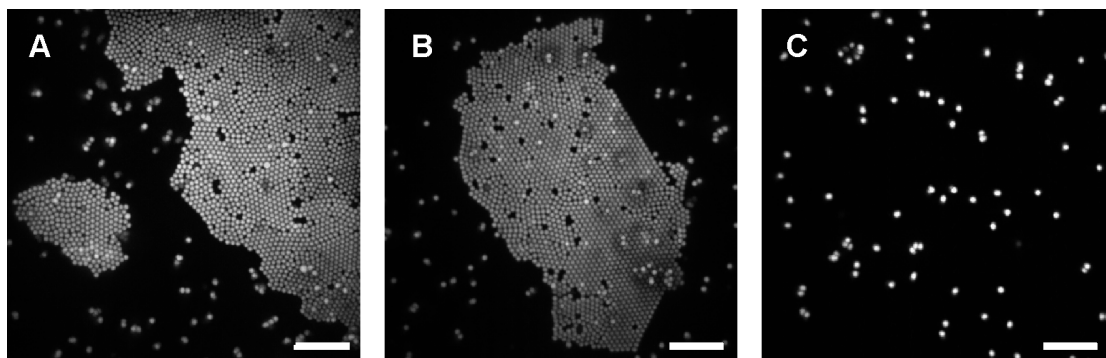


Fig. S1 The formation of flying colloidal carpets depends on the dsDNA spacer length. Whereas colloids coated with long or intermediate length DNA can form 2D-crystal structures, colloids coated with short DNA form amorphous layers. (A) λ -DNA coated colloids (48500 bps). (B) pBelo DNA-coated colloids (7500 bps). Pair-correlation functions for λ -DNA the first correlation peak is at $(1.01 \pm 0.02) \mu\text{m}$ and for the shorter pBelo DNA this peak is at $(0.99 \pm 0.03) \mu\text{m}$, suggesting that the different grafting density does not alter the distance between neighboring colloids within the carpets. (C) Colloids coated with 12 bp ssDNA (no spacer). In all three samples the supporting glass surface was modified with a monolayer of PLL-PEG-biotin and ssDNA complementary to the one on the colloids. All scale bars measure $10 \mu\text{m}$.

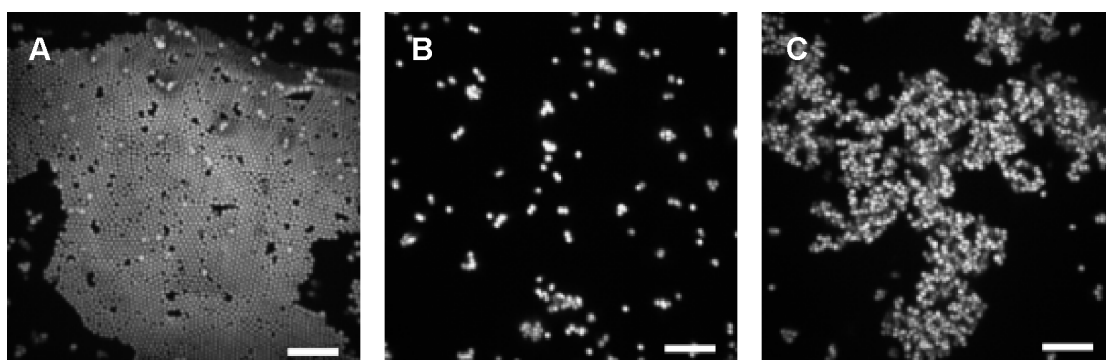


Fig. S2 Comparison between aggregations of DNA coated colloids and colloids surrounded by DNA free in solution. (A) λ -DNA coated colloids aggregate into a flying colloidal carpet. (B) Colloids surrounded by a solution of unbound λ -DNA (DNA is

present at the same concentration as used in fig. A) hardly aggregate; only small 3D clusters appear. (C) If the concentration of λ -DNA is increased 100x, large aggregations with 3D branches appear. All scale bars are 10 μm .

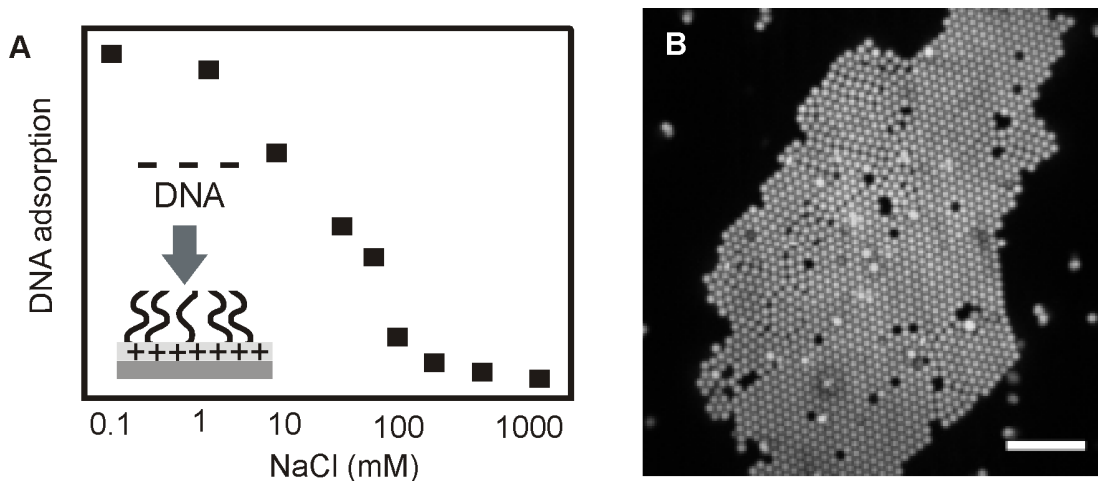


Fig. S3 As long DNA can adsorb non-specifically to a PLL-PEG layer, "sticky ends" are not needed to form carpets. (A) DNA adsorption to PLL-PEG as a function of the ionic strength. This graph is a schematic representation of figure 5 from reference 23. Insert: schematic representation of the negatively charged DNA interacting with the positive charge of the polylysine underneath the PEG monolayer. (B) Even colloids coated with blunt ended λ -DNA can form colloidal carpets, indicating that physisorption is enough. Scale bar measures 10 μm .