

Supplementary Movie Captions

Supplementary Movie 1.

Description: Thermally reversible assembly of DNA-coated patchy particles ($\chi = 0.34$). 100 times faster than actual time.

Supplementary Movie 2. Formation of chain structures.

Description: DNA-coated patchy particles ($\chi = 0.34$). 300 times faster than actual time.

Supplementary Movie 3.

Description: Formation of dimer chains (simulation).

Supplementary Movie 4.

Description: Formation of dimer chains from singlets to clusters and to chains.

Supplementary Movie 5.

Description: Formation of trimer chain.

Supplementary Movie 6.

Description: Formation of trimer chains (simulation).

Supplementary Movie 7.

Description: Formation of bilayers ($\chi = 0.6$). 1800 times faster than actual time.

Supplementary Movie 8.

Description: Formation of bilayers (simulation).

Supplementary Movie 9.

Description: Transition from a S-shaped chain to a C-shaped chain. 210 times faster than actual time.

Supplementary Movie 10.

Description: Formation of bent chains, rings and compact chains ($\chi = 0.34$, F127 1%). 1500 times faster than actual time.

Supplementary Movie 11.

Description: A semiflexible compact chain with a kink. 100 times faster than actual time.