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**DNA Origami Wrapped Colloids for Programmable Self-Assembly** XIAOJIN HE, Center for Soft Matter Research, New York University, MATAN YAH BEN ZION, Department of Physics, New York University, RUOJIE SHA, Department of Chemistry, New York University, YIN ZHANG, Department of Physics, New York University, NADRIAN SEEMAN, Department of Chemistry, New York University, PAUL CHAIKIN, Department of Physics, New York University — Here we demonstrate a strategy for functionalizing colloids to realize fully addressable, oriented binding sites on the colloidal surface using DNA origami belts as cages to wrap over colloidal particles. DNA origami, as a print-board, provides great directionality and flexibility in assembling particles. In order to match the microscopic particles, we first assemble DNA origami tiles into micro-sized DNA origami linear or cross-shape belts. Short single-stranded handles, decorated on one side of the DNA origami belt, can hybridize to complementary strands coating on the particle and wrap around the particle. By placing sticky ends on different positions on the other side of the DNA origami belts, we can assemble the DNA origami wrapped colloids with complementary particles into finite clusters with different symmetries or arbitrary configurations. These DNA origami wrapped colloids can also serve as building units to directionally and specifically organize themselves into higher-ordered architectures via origami-origami interactions.

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