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Light-Driven Control of DNA-Mediated Colloidal Assembly<sup>1</sup> EMILY W. GEHRELS, ANATOLY RINBERG, ANDREW M. BERGMAN, VINOTHAN N. MANOHARAN, Harvard University — Despite the success in programming the equilibrium structures of systems of DNA-coated colloids, little work has been done to program the self-assembly kinetics of these systems. Here we present a new approach towards dynamic control of systems of DNA-coated colloids that involves light-modulated interactions between particle pairs. To achieve this control, we introduce different dyes into different particle species. These dyes cause the particles to locally heat upon illumination with the appropriate wavelength, thereby affecting only the DNA binding between particles of the targeted color. With this new control we rapidly and reversibly switch chosen pairs of particle species between binding and unbinding, and we demonstrate how this modulation can be used to understand the behavior of driven, out-of-equilibrium systems.

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