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Self Assembly of Colloidal Particles at Small N GUANGNAN MENG, NATALIE ARKUS, RYAN MCGORTY, MICHAEL BRENNER, VINOTHAN MANOHARAN, Harvard University — We confine a small number ($N \approx 10$) of micron-sized colloidal particles within micro-wells, and we use this finite system to study the process of self-assembly. The reversible aggregation of colloidal particles is controlled by a short-range depletion attraction, which is induced by poly(N -isopropylacrylamide) nano particles. We use digital holographic microscopy to monitor the structural and kinetic properties of self-assembled colloidal clusters, and we use micro-wells to collect ensemble statistics. We compare our experimental results with theory and simulations, which probe how energetics and kinetics affect the packing structures.

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