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Self Assembly of Colloidal Particles at Small N GUANGNAN MENG, Harvard University, ZHENGDONG CHENG, Texas A&M University, MICHAEL BRENNER, Harvard University, VINOTHAN MANOHARAN, Havard University, DEPARTMENT OF PHYSICS, HARVARD UNIVERSITY COLLABORATION, DEPARTMENT OF CHEMICAL ENGINEERING, TEXAS A&M UNIVERSITY COLLABORATION — We confine the dilute colloidal suspension inside emulsion droplets and study the structures of the aggregated clusters at small particle number ($N \approx 10$) in order to understand the governing rules of equilibrium self-assembly. The aggregation process is controlled by the short-range weak depletion attraction between particles, and the structural and dynamic properties of self-assembled colloidal clusters are monitored via optical microscopy. We compare the experimental results with the theory and simulations, which probe how the number of local minima increases with number of particles. Our system may be a good model system for understanding generic features of glass and gel transitions.

Guangnan Meng
Harvard University

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