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Capturing "glasslites": structures and dynamics of colloidal liquids under spherical confinement BO ZHANG, XIANG CHENG, University of Minnesota-Twin Cities — Recent theories have predicted that when a supercooled liquid approaches the glass transition, "glasslites"-amorphously-ordered particle clusters-nucleate within the liquid, which lead to static correlations dictating the dramatic slowdown of liquid relaxation. The prediction, however, has yet to be verified in 3D experiments. Here, we design a 3D colloidal system, where particles are confined inside spherical cavities with an amorphous layer of particles pinned at boundary. Using this novel system, we capture the glasslites proposed in theories and demonstrate the development of a static correlation. Moreover, by investigating the dynamics of spherically confined samples, we reveal a profound and unexpected influence of the static correlation on the underlying colloidal glass transition. These measurements provide crucial information on how the configurational entropy of a confined supercooled liquid varies when approaching the glass transition.

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