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Microscopy studies of the re-entrant glass transition. ANDRZEJ LATKA, NORA GRANETO, PIOTR HABDAS, Dept. of Physics, Saint Joseph's University — Colloidal suspensions are a model system for studying the glass transition. At the volume fraction $\phi_g \approx 0.58$ a glass transition occurs and a hard sphere colloidal glass is formed. The formation of hard sphere glass is attributed to the "caging" effect, in which the particles form cages around each other that restrict their movement. Introducing an attractive depletion force between the particles surprisingly causes the hard sphere glass to melt and the system becomes a liquid. Interestingly, by further increasing the attractive force an attractive glass is formed. Our system is a suspension of nearly hard-sphere colloidal particles and nonadsorbing linear polymer which induces a depletion attraction between the particles. We study the dynamics of the colloidal particles using microscopy techniques. In particular, our research is focused on the transition into the attractive glass phase.

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