

Dynamical arrest in dense short-ranged attractive colloids

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Theoretical work, together with simulation and experimental studies have indicated that particles with a short-ranged attraction exhibit a range of new dynamical arrest phenomena. These include very pronounced reentrance in the arrest curve, a logarithmic singularity in the density correlation functions, the existence of 'attractive' and 'repulsive' glasses, the possibility of a sharp glass-glass transition and the emergence of higher-order glass transition singularities on the fluid-glass line. The effect of activated bond processes on the lifetime of short-ranged attractive glass is also considered, and finally a new route to the formation of colloidal gels at low densities is proposed.