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MODEL SOFT COLLOIDS OUT OF EQUILIBRIUM: GLASS-LIKE AND RE-ENTRANT TRANSITIONS

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ABSTRACT

Star polymers with tunable number and size of arms, and thus interactions, represent ideal model systems for exploring the regime of soft material behaviour that interpolates between hard spheres and polymeric coils. This regime is characterized by a rich variety of properties that reflect the combination of polymeric and colloidal features. In this review we discuss some of these properties, and in particular the host of kinetic frustration phenomena encountered with such ultrasoft particles. They include soft colloidal glass-like transitions (a kind of jamming), induced upon increasing volume fraction (by heating or increasing the mass concentration), and the glass melting upon application of thermal (depletion) forces.

KEYWORDS: Soft colloids, glass transition, star polymers, jamming, depletion
