

Abstract Submitted  
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**liquid-solid transitions in a bridging system with short-ranged attractive interparticle potential**<sup>1</sup> GUANGCUI YUAN, National Institute of Standards and Technology, JUNHUA LUO, Institute of Chemistry, Chinese Academy of Sciences, CHUANZHANG ZHAO, Ningbo University, CHARLES C. HAN, Shenzhen University — we approach to the liquid-solid transitions problem from a very fundamental point—build a model system with simple and tunable inter-particle potential, then investigate the effect of the inter-particle potential (mainly the attractive part) on the transitions, which includes gelation at low packing density and glass formation at high packing density. A peculiar way to control inter-particle attraction by using mixed suspensions of large hard colloid and adsorptive small soft microgel will be introduced, in which the small particle can serve as a bridge to connect neighbouring large particles thus to introduce the bridging attraction. We determined the positions of the state-transition boundaries and describe the characters of these transitions, from structural, dynamical, and thermodynamic point of views. Our results indicate that the attraction force between the added small polymers and the large particles (or the origin of effective inter-particle potentials, or maybe the very details of attractive potentials) have a fundamental impact on the mechanism of liquid-solid transition. Under this direction, we will give our interpretation on the glass transition of structural materials.

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