

Close packing of spheres in colloidal suspensions

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The transition from well-ordered crystalline phases to glassy phases in colloidal suspensions of silicon spheres is analyzed as a function of the ratio of two differently sized particle diameters. Pair correlation functions and packing fractions for each of the sphere ratios are measured and used as quantitative indicators of crystalline or glassy states. It is found that as the ratio of larger spheres to smaller spheres is increased, the packing fraction of the system decreased, along with its long range order, as is indicated by the pair correlation functions. These results are in agreement with what was expected based on previous research in other systems with close sphere packing.