

Abstract Submitted
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Emergence of Correlations in Contact Structure of Disordered Binary Sphere Packings¹ ISHAN PRASAD, CHRISTIAN SANTANGELO, GREGORY GRASON, Univ of Mass - Amherst — We study structural and network properties of random, binary sphere packings. In particular, we are interested in studying how bi-dispersity and sphere composition influence structural features such as packing density, local contact geometry and like-particle connectivity in such systems. It is known that for binary spheres with very large size asymmetry, there exists a special composition which yields maximum packing density. We calculate the contact distribution for this configuration, and find that this special point seems to control the structural features in its vicinity. In our simulations, jammed configurations of athermal spheres having soft repulsive potential are generated as a function of size ratio and volume fraction. Beyond certain size ratio and comparable weight fractions, we find an excess of unlike (large sphere - small sphere) contacts in these packings which make them inhomogeneous, we define it's measure as the Inhomogeneity Parameter. Such an inquiry on local contact and global connectivity would help better understand transport properties in random networks of bi-disperse spheres.

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