

Percolation Transition in an Agglomeration of Spherical Particles

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Abstract : Agglomerations of polydisperse systems of spherical particles are created in computer simulations using a simplified stochastic-hydrodynamic model: Particles sink to the bottom of the cylinder, taking into account gravity reduced by the buoyant force, the Stokes friction force, the added mass effect, and random velocity changes. Two types of particles are considered, with one of them being able to create connections to neighboring particles of the same type, thus forming a network within the agglomeration at the bottom of a cylinder. Decreasing the fraction of these particles, a percolation transition occurs. The critical regime is determined by investigating the maximum cluster size and the percolation susceptibility.

Keywords : binary system, maximum cluster size, percolation, polydisperse

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