

Abstract Submitted
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Clogging transition of bi-disperse disks driven through a periodic lattice of obstacles.¹ HONG NGUYEN, University of South Florida, CHARLES REICHHARDT, CYNTHIA JANE REICHHARDT, Theoretical Division, Los Alamos National Laboratory — We numerically examine the clogging transition for binary disks flowing through a two-dimensional periodic obstacle array. We show that clogging is a probabilistic event that occurs when the mobile disks become trapped in dense connected clusters, producing a transition from a homogeneous flowing state to a heterogeneous or phase separated jammed state. The probability for clogging to occur for a fixed time interval increases with increasing disk packing or decreasing obstacle spacing. For driving forces applied at different angles with respect to the symmetry axis of the obstacle array, we show that certain directions exhibit a higher clogging susceptibility. We also observe a filtration effect in which one species becomes completely trapped while the other species continues to flow.

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