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Effects of molecular weight on eruptive flow of a multi-component system by interacting lattice gas RAS PANDEY, Naval Research Laboratory and University of Southern Mississippi, JOE GETTRUST, Naval Research Laboratory — Mobile particles (A,B), characterized by their molecular weights and interactions in an effective (interacting) medium, are driven by a hydrostatic pressure bias (H) and their concentration gradient upward against gravity from a source at the bottom. Initially, particles are randomly placed on a discrete lattice of size L_x x L_y x L_z with equal proportion. Particles execute their stochastic movements with the Metropolis algorithm. Periodic (open) boundary conditions are used along the transverse (longitudinal) directions. Particles continue to enter the lattice from the source according to their concentration in the lattice and leave from the open ends when they attempt to hop out of the lattice (top and bottom). The net flow of particles reaches steady state at that point a self-organized structure emerges at each bias. Response of the flux density of constituents to pressure bias is examined as a function of their molecular weight.

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