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Pattern formation and strongly nonlinear coating in Landau-Levich flow of suspensions JUSTIN KAO, ANETTE HOSOI, Massachusetts Institute of Technology — We investigate Landau-Levich coating of a solid wall by a suspension. When the suspended particle size exceeds the liquid film thickness, capillary forces lead to an effective attraction between particles, as well as pinning of individual particles against the wall. Experiments show small-scale clustering of particles, a strongly nonlinear relationship between the particle coating density and the wall speed, and under certain conditions, heterogeneous coating with long-range correlations in the particle density. We present a continuum model for particle density based on a Cahn-Hilliard formalism.

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