

Abstract Submitted
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Dip-coating in a suspension: entrainment of particles¹ ALBAN SAURET, SVI (CNRS, Saint-Gobain), BENEDICTE COLNET, SVI (CNRS/Saint-Gobain), GUILLAUME SAINGIER, SVI (CNRS, Saint-Gobain), HOWARD STONE, Princeton University, MARTIN BAZANT, MIT, EMILIE DRESSAIRE, FAST & NYU Tandon School of Engineering — Withdrawing an object from a suspension can lead to the entrainment of particles on the solid surface. When unwanted, such particle trapping is associated with the contamination of the solid surface, but it can also be leveraged to design new materials. To study the entrainment of particles during the dip-coating, we focus on a model approach, in which a solid plate is withdrawn from a bath of hard spheres in suspension. We observe different regimes depending on the withdrawal velocity and we experimentally characterize the number density of particles trapped on the solid plate. Surprisingly, our results show that there is a critical velocity below which no particles are entrained. The experimental findings are rationalized to predict the critical velocity below which no particles are entrained on the plate.

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