

Abstract Submitted  
for the DFD09 Meeting of  
The American Physical Society

**Drag-out of bubbles by a plate withdrawn from a liquid bath<sup>1</sup>**

JUSTIN KAO, ANDREA BLAKEMORE, ANETTE HOSOI, Massachusetts Institute of Technology — We report work on a new aspect of the classic Landau–Levich problem of liquid drag-out by a moving plate, namely, interaction of bubbles with the coating flow. Due to the cheerios effect, bubbles present in a liquid bath may gather at menisci such as those caused by a partially-submerged plate. Our experiments show that a critical withdrawal speed exists. Below this speed, bubbles are in stable equilibrium and remain stationary in the lab frame as the plate is withdrawn. Above the critical speed, no stable equilibrium exists and bubbles are drawn up onto the plate, with obvious consequences for the uniformity of the resulting coating. We examine the dependence of the critical speed on fluid properties.

<sup>1</sup>This work was supported by NSF DMS-0803083 and the MIT Undergraduate Research Opportunities Program.

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Date submitted: 06 Aug 2009

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