

Abstract Submitted  
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**The Capillary Fluidics of Espresso**<sup>1</sup> NATHAN OTT<sup>2</sup>, School of Science and Technology, DREW WOLLMAN, Portland State University, JOHN GRAF, NASA Johnson Space Center, MARK WEISLOGEL, Portland State University — Espresso is enjoyed by tens of millions of people daily. The coffee is distinguished by a complex low density colloid of emulsified oils. Due to gravity, these oils rise to the surface forming a foam lid called the crema. In this work we present a variety of large length scale capillary fluidic effects for espresso in a gravity-free environment. Drop tower tests are performed to establish brief micro-gravity conditions under which spontaneous capillarity-driven behavior is observed. Because the variety of espresso drinks is extensive, specific property measurements are made to assess the effects of wetting and surface tension for ‘Italian’ espresso, caffe latte, and caffe Americano. To some, the texture and aromatics of the crema play a critical role in the overall espresso experience. We show how in the low-g environment this may not be possible. We also suggest alternate methods for enjoying espresso aboard spacecraft.

<sup>1</sup>NASA NNX09AP66A, Glenn Research Center

<sup>2</sup>High School

Mark Weislogel  
Portland State University

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