

Abstract Submitted
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How does a soap film burst during generation?¹ EMMANUELLE RIO, LAURIE SAULNIER, FREDERIC RESTAGNO, DOMINIQUE LANGEVIN, LPS, Universite Paris Sud — Foams are dispersions of bubbles in a liquid matrix in the presence of stabilizing surfactants. Even if foams are ubiquitous, the ability of a solution to create a certain foam quantity is still not fully understood. As a first step, we choose to work on a simplified system and studied the stability of a soap film during its generation. We have built an experiment, in which we determine simultaneously the velocity of a frame pulled out of a soapy solution and the entire shape of the liquid film. We found that the film is made of two parts: the bottom part is of uniform and stationary thickness, well described by the classical Frankel's law; in the top part, the film drains until a black film appears near the frame upper boundary frame, and then bursts. In this study, we characterize both part of the films and show that the Frankel law breaks down at high capillary number due to surfactants confinement. We also explain why films pulled at high velocity have a shorter lifetime than those pulled at low velocity.

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