Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

The Making and Breaking of Viscous Bubbles PHALGUNI SHAH, Northwestern University, ELEANOR WARD, None, MICHELLE DRISCOLL, Northwestern University — A Newtonian soap bubble ruptures on the timescale of milliseconds, and this rupture grows at a constant rate, known as the Culick velocity [1]. This rupture speed is believed to be independent of fluid viscosity, after a short transient [2]. We experimentally studied the rupture of soap films made of varied concentration of glycerol and water, covering over two orders of magnitudes in fluid viscosity. The constant-thickness films were formed by stretching a known fluid volume to a specific size on a custom film stretcher. The rupture speed of films was observed to decrease with the increase in viscosity. One hypothesis for this decrease is that the thickness profile of the stretched film is a function of fluid viscosity. To test this hypothesis, we measure the film thickness using an ultra-fast multi-wavelength interferometry setup. [1] F. E. C. Culick, Journal of Applied Physics(1960) [2] N. Savva and J. W. M. Bush, Journal of Fluid Mechanics (2009)

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Date submitted: 31 Jul 2020 Electronic form version 1.4