

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Pinch-off and Fracture of Bubble Rafts¹ CHIN-CHANG KUO, MICHAEL ARCINIAGA, MICHAEL DENNIN, Department of Physics and Astronomy, University of California, Irvine — The breaking dynamics of a bubble raft bridge between two walls which are pulled apart is studied experimentally. Unlike the pinch-off of liquids, various deformation types can be observed in this complex fluid system. We find that a large ratio between the initial width and length of the bubble raft bridge leads to a solid-like ripping of the foam layer, whereas the deformation tends to have a liquid-like pinch-off behavior for smaller ratios. Furthermore, the bubble size distribution, crystallization and the pulling velocity can have a significant effect on the bridge breaking. In particular, for a highly ordered and uniform bubble composition with a fast pulling velocity, the fracture occurs in the early stage of the pinch-off, which demonstrates an intermediate state between solid-like and liquid-like breaking. We will report on critical pulling speeds for fracture and scaling exponents for pinch-off.

¹Supported by NSF DMR-0907212 and Research Corporation.

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Date submitted: 22 Nov 2009

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