Abstract Submitted
for the DFD06 Meeting of
The American Physical Society

Nanoscale patterns on micron-sized bubbles in foams EMILIE DRESSAIRE, DAVID BELL, DEAS, Harvard University, RODNEY BEE, ALEX LIPS, Unilever Research, Trumbull CT, HOWARD STONE, DEAS, Harvard University — The rheology and coarsening of foams is closely related to the microstructural characteristics of the small gas bubbles and their surface properties. We present experimental results of a foam formed upon shearing a mixture composed of glucose syrup and sucrose ester. Transmission Electron Microscopy reveals micron-size bubbles whose surfaces are fully covered with regular nanodimension, generally hexagonal, patterns. The influence of the shear rate during foam generation and the setting time on the development of the nanoscale patterns on the gas microcells are described. Plausible routes, driven by disproportionation of the gas from the small bubbles, for the formation of the nanoscale patterns are considered including a nucleation/crystallization pathway (Kim et al. 2003 Langmuir **19**, p. 8455) and the buckling of an elastic insoluble surface film.

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Date submitted: 04 Aug 2006 Electronic form version 1.4