Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Step Strains in a Disordered Foam MICHAEL TWARDOS, University of California Irvine, MICHAEL DENNIN — Foams consisting of gas bubbles separated by liquid walls are a unique material system that can exhibit solid like properties under small strains and interesting fluid properties under larger strains including stress fluctuations and intermittent flow. Their nonlinear flow behavior is characterized by a viscosity dependence on shear rate and the emergence of a "yield stress." Foams are also interesting as part of a more general class of materials that can be referred to as "complex fluids" (granular systems, emulsions) that have been considered in the theoretical framework of jamming. One question raised in studying foams in particular and complex fluids more generally is what is the fundamental feature (including a length scale and time scale) that most prominently describes the flow behavior of these systems near the jamming transition. What properties are universal? To help answer some of these questions, we will discuss an experiment to probe the mechanical properties of a bubble raft (two dimensional foam) by considering step strains applied to this system and focusing on the system's response (stress drops).

Michael Twardos
University of California Irvine

Date submitted: 02 Dec 2004 Electronic form version 1.4