

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Sorting Category: 10.10 (E)

Recoil Dynamics after Laser Ablation of Single Cell Edges in Embryonic Epithelia¹ XIAOYAN MA, M. SHANE HUTSON, Vanderbilt University — In order to determine the interfacial tensions along cell-cell boundaries in living fruit fly (*Drosophila*) embryos, we have developed a microsurgical method based on laser ablation and laser-scanning confocal microscopy. Following ablation of one cell edge, we follow the recoil dynamics (strain relaxation) of adjacent GFP-labeled cell edges (with time resolution down to 2 ms). The recoils are consistently fit best by a double exponential decay with one time constant around 80 ms and the other around 1.2 s. The initial recoil velocities are in the range of 10-20 $\mu\text{m/s}$. We observe the same biphasic strain relaxation in multiple ($N = 60$) embryos at different developmental stages. Both recoil time constants are much longer than either the plasma lifetime or the duration of cavitation.

¹Supported by NSF Grant #0545679

Prefer Oral Session
 Prefer Poster Session

Xiaoyan Ma
xiaoyan.ma@vanderbilt.edu
Vanderbilt University

Date submitted: 03 Dec 2006

Electronic form version 1.4