

Abstract Submitted
for the DFD05 Meeting of
The American Physical Society

Capillary rise between elastic sheets HO-YOUNG KIM, School of Mechanical and Aerospace Engineering, Seoul National University, L. MAHADEVAN, Division of Engineering and Applied Sciences, Harvard University — When a paintbrush is dipped into a bucket of paint and pulled out, surface tension forces cause the individual hairs in the brush to coalesce which simultaneously becomes impregnated with paint. We study a simple model of this elastocapillary interaction using the surface-tension-driven vertical rise of a liquid between two long flexible hydrophilic sheets that are held a small distance apart at one end. This leads to a modification of the classical law of Jurin and we provide an analytic theory for the static shapes of the sheets as well as the liquid rise height. It is shown that our experiments are quantitatively consistent with the theory.

Ho-Young Kim
School of Mechanical and Aerospace Engineering, Seoul National University

Date submitted: 04 Aug 2005

Electronic form version 1.4