

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Spontaneous thermally-induced delamination of polymer films¹

PUNIT KOHLI, KEXIN JIAO, CHUANHONG ZHOU, JARED WYNNE, ANISH POUDE, PHILIP CHU, Southern IL Univ-Carbondale, CHEMISTRY AND BIO-CHEMISTRY COLLABORATION, MECHANICAL ENGINEERING COLLABORATION — In this talk, we will discuss spontaneous thermally-induced biaxial delamination of thin polymer films from flat surfaces. The delamination results in the formation of ultra-high aspect ratio (up to 1000) of micro-ribbons of polydimethylsiloxane. The thickness, width, and length of the micro-ribbons is about 10 μm , 100 μm , and up to many centimeter respectively. We will demonstrate that the formation of polymer micro-ribbons can be experimentally controlled. Specifically, the thickness and mechanical properties of polymer, and geometrical and physical properties of the substrate played crucial roles in defining the delamination process. From the practical viewpoint, we demonstrate the use of the micro-ribbons for imaging and separation applications.

¹NSF, NIH, and SIUC

Punit Kohli
Southern IL Univ-Carbondale

Date submitted: 14 Nov 2014

Electronic form version 1.4