Supporting Information for:

The role of substrate pre-stretch in post-wrinkling bifurcations
Anesia Auguste¹, Lihua Jin², Zhigang Suo²*, Ryan C. Hayward¹,*

¹Department of Polymer Science & Engineering, University of Massachusetts, Amherst, MA, 01003, USA. *E-mail: rhayward@mail.pse.umass.edu

²School of Engineering and Applied Sciences, Kavli Institute for Nanobio Science and Technology, Harvard University, Cambridge, MA, 02138, USA. *E-mail: suo@seas.harvard.edu

Figure S1. (a) Bifurcation curves for $\lambda_0 = 1.0$ show no detectable hysteresis from the first loading cycle to unloading and subsequent reloading. Optical profilometry images of the surface (b) during the first loading at a film strain of 0.24, and (c) during the second loading at a film strain of 0.23.

Videos

Video S1. The surface line profile (left) is shown as a function of position transverse to the direction of compression, as denoted by the solid line on the 2D profile (right), for a sample with a substrate pre-stretch of 0.7 that exhibits chaotic post-wrinkling.
**Video S2.** Simulation result for period doubling of wrinkles with a substrate pre-stretch of 0.7 and a modulus ratio of the film to substrate of 50.

**Video S3.** Simulation result for period tripling of wrinkles with a substrate pre-stretch of 0.7 and a modulus ratio of the film to substrate of 50.

**Video S4.** Simulation result for period quadrupling of wrinkles with a substrate pre-stretch of 0.7 and a modulus ratio of the film to substrate of 50.