

Abstract Submitted
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Wrinkling of an Annulus KAMIL TOGA, University of Massachusetts, Amherst, BENOIT ROMAN, JOSE BICO, Laboratoire de Physique et Mecanique des Milieux Heterogenes, ESPCI Paris, France, THOMAS RUSSELL, NARAYANAN MENON, University of Massachusetts, Amherst, UNIVERSITY OF MASSACHUSETT, AMHERST TEAM, LABORATOIRE DE PHYSIQUE ET MECANIQUE DES MILIEUX HETEROGENES, ESPCI PARIS, FRANCE TEAM — We report on an experiment in which we study the wrinkling of an annular elastic film subject to different radial tensions at the inner and outer diameter. The annuli were made from polystyrene films of thickness ranging from 62 to 180 nm, and floated on water. They were then transferred onto a Langmuir-Blodgett trough filled with acidic aqueous subphase. The surface tension on the inside of the annulus is held fixed, while the surface tension outside the annulus is continuously varied by compressing an insoluble surfactant. When the differential tension is increased beyond a threshold value, radial wrinkles form in the interior of the annulus and extend outwards. We studied the length of wrinkles formed as a function of the differential tension produced by the surfactant, and for a range of film thickness.

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