Abstract Submitted
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Relaxation of Capillary Wrinkles[1] KAMIL TOGA, NARAYANAN MENON, THOMAS RUSSELL, University of Massachusetts, Amherst — We have investigated the relaxation of a wrinkle pattern on a thin viscoelastic film. The films are made from spin-coated PS (polystyrene) of thickness ranging from 40 to 240 nm that were floated on the surface of water. Viscoelastic behavior is introduced to the film by depressing the glass transition of PS with a soluble plasticizer, dioctyl phthalate. Wrinkle patterns are formed by placing a small droplet ($\sim 1\mu$L) at the center of the floating disc. Due to the differential tension generated across the film, radial wrinkles form around the drop where the compressive axial force buckles the membrane. Thereafter, length of the wrinkles decays, and so does their wavelength. We have studied the relaxation of wrinkles as a function of PS molecular weight and plasticizer content, in order to understand the relationship with the bulk glass transition temperature.

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Kamil Toga
University of Massachusetts, Amherst

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