

Supporting Information (SI) for:

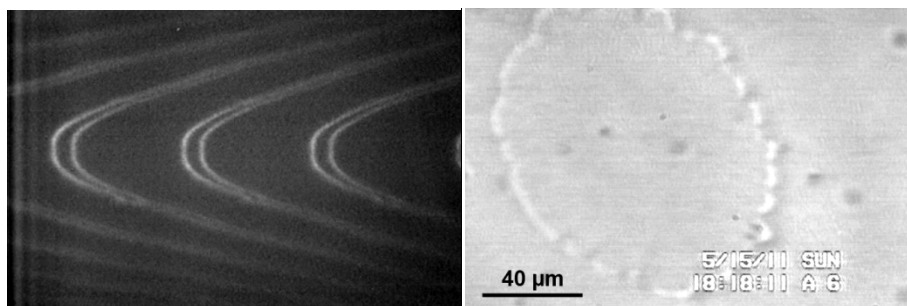
**Hydrophobic Interactions between Polymer Surfaces: Using
Polystyrene as a Model System**

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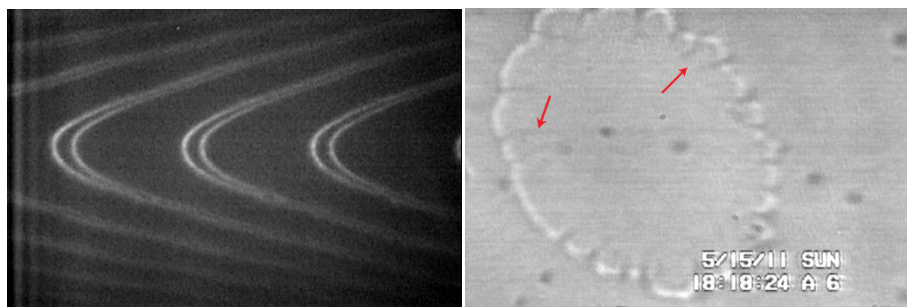
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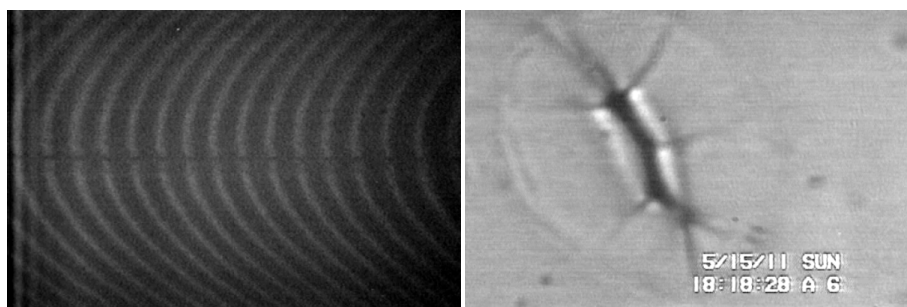
Fringes of equal chromatic order (FECO) and corresponding top view optical microscope images for two polystyrene surfaces separating in degassed 0.001 M NaCl are shown in SI Figure 1. Note the fingering patterns of cavities associated with the separation were indicated by red arrows in SI Figure 1b. Crack propagation within the polymer film during the detachment of PS surfaces from adhesive contact and the fracture pattern were observed by top view optical microscope and corresponding discontinuity in FECO shown in SI Figure 1c.



(a)



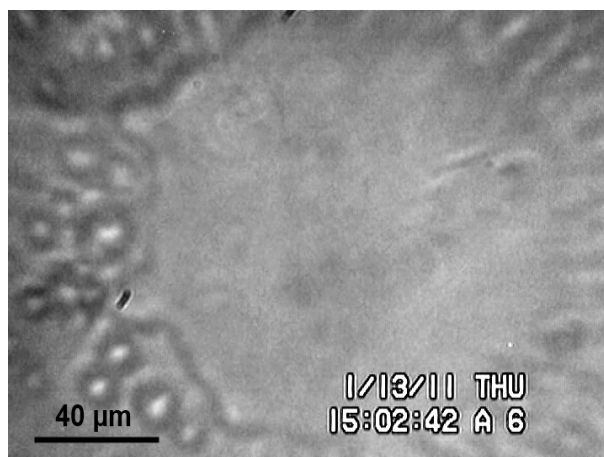
(b)



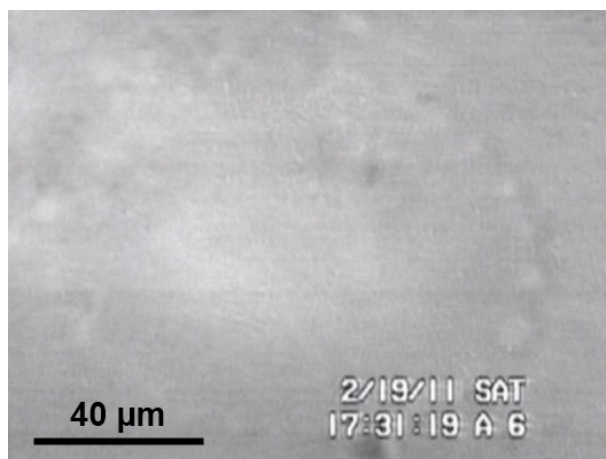
(c) After jump out from adhesive contact.

SI Figure 1. FECO (left) and corresponding top view optical microscope images (right) of two polystyrene surfaces in degassed 0.001 M NaCl (a) before separation (b) during separation (c) after jump out from adhesive contact.

SI Figures 2 and 3 show the top view optical microscope images for the air meniscus growth through outward fingering patterns outside the contact region of two polystyrene surfaces in different aqueous solutions.



SI Figure 2. Air meniscus growth through fingering patterns as observed by top view microscope after PS surfaces jumped into contact in 1.0 M CH₃COOH.



SI Figure 3. Air meniscus growth through fingering patterns as observed by top view microscope after PS surfaces jumped into contact in 0.1 M NaCl.