

Abstract Submitted
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X-ray imaging technique for studying contact-line statics and dynamics of drops on soft substrates SU JI PARK, JI SAN LEE, JUN HO LEE, JINKYUNG KIM, POSTECH, BYUNG MOOK WEON, Sungkyunkwan University, JUNG HO JE, POSTECH — When a drop sits on a soft surface, its surface tension deforms the soft material and creates a wetting ridge. X-ray microscopy is useful to measure the shape of the ridge with high spatial and temporal resolutions. This technique allows us to directly image ridge-growth dynamics in real time. We find that the ridge-tip formation is actually asymmetric and independent of substrate stiffness and growth dynamics. From this situation, we directly measure the solid surface stresses. Our approach is a general technique that can be used to measure surface stresses for soft materials within a wide stiffness range. Finally, we suggest a general framework of the wetting behaviors on a soft solid with the combination of Young's and Neumann's laws in macroscopic and microscopic scales, respectively. X-ray microscopy would be useful for further understanding of contact-line dynamics on soft materials.

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