

Surface morphological changes of a film-substrate system due to water

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Abstract: Instabilities of stiff films on soft substrates generate various types of surface patterns, including wrinkles and folds. These patterns are ubiquitous in nature, and controlling the transition from wrinkles to folds yields functional materials and understanding of biological morphogenesis. In this talk, I will present an unconventional approach to triggering the transition using capillary forces of water and discuss new fabrication opportunities using the approach for functional nanomaterials such as DNA nanowires.

Bio: So Nagashima earned his Ph.D. from Keio University in 2012. Following his postdoctoral research at Korea Institute of Science and Technology and Princeton University, he joined the faculty at Osaka University in 2017, where he is currently an assistant professor of engineering. His research is focused on developing new systems that are capable of adjusting their morphology and functions in response to changes in their environment. In particular, he is interested in manipulating the morphology of solid surfaces on the micro-/nanoscale by adopting bio-inspired engineering approaches for rational design of new classes of materials and devices for versatile applications.