

Abstract Submitted  
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**Smart change in leaf morphology to tune the wettability** HOSUNG KANG, SARA FLEETWOOD, SUNGHWAN JUNG, Virginia Tech — Plants are sessile organisms, but some of them are able to change their features to survive. We found *Cercidiphyllum japonicum* (Katsura) leaves actively adapt to their fine structures on the leaf surface in response to external stimuli. It is fascinating how the structural changes can affect their physical properties. In this present study, we are investigating the effect of external environments (temperature, cell hydration, and acid rain) on microscale papillose epidermal cells and nanoscale waxes. Using environmental scanning electron microscopy (ESEM) and atomic force microscopy (AFM), we measured micro and nano structures of the Katsura leaves. We found a functional relation between the micro and nano structures and the contact angle of the leaf's surface. As the epidermal cells shrink and the waxes erode, the contact angle decreases. A simple Cassie-Baxter model based on the wettability of textured surfaces has been used to characterize changes of the contact angle.

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