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Surface Chemistry spotLIGHT

Hydrophobicity characterization with SOLA light engine®

Characterization of Superhydrophobic Surface Coatings

When two or more water droplets coalesce on a superhydrophobic surface, the resulting droplet can jump away from the surface due to inertial–capillary energy conversion. The resulting passive shedding of micro-scale water droplets has the potential to enhance heat transfer, anti-icing, and self-cleaning properties. To study this process, researchers at the University of Illinois developed an improved imaging technique called focal plane shift imaging (FPSI) to measure three-dimensional (3D) droplet trajectories. A high-speed camera is used to obtain video recordings at variable frame rates up to 500,000 frames per second. Illumination is supplied by a SOLA SM light engine®, specifically chosen for its high-intensity, low-power consumption and narrow spectral range (380–680 nm) in order to minimize heat generation at the surface due to light absorption. The effects of initial droplet size mismatch and multiple droplet coalescence on the jumping droplet velocity are revealed, showing that multi-droplet jumping has the potential to enhance the droplet departure speed.

Source: © Science Photo Library
The *Salvinia molesta* fern has an incredibly complex surface meaning it can survive under water

Reference: Cha H, Chun JM, Sotelo J, Miljkovic N. Focal Plane Shift Imaging for the Analysis of Dynamic Wetting Processes. ACS Nano. 2016;10(9):8223-8232

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