

Abstract Submitted
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Repellency of the Lotus Leaf: Resistance of Water Intrusion under Hydrostatic Pressure C.W. EXTRAND, Entegris — In an attempt to better understand the repellency of the lotus leaf, a model was constructed from hydrophobic hemispheres arranged on a hexagonal array. Two scenarios were considered. In the first, the hemispheres were smooth. In the second, the hemispheres had a secondary roughness. The model shows that without the secondary structure, the repellency of this surface geometry is relatively poor. The secondary structure directs the surface tension upward, allowing much greater resistance to penetration of water and prevents the loss of repellency. From the proposed model, the maximum intrusion pressure (or so-called Cassie-Wenzel transition) of the lotus leaf is estimated to be 12-15 kPa. The predicted maximum pressure agrees well with reported values from experimental measurements.

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