



绿色过程与

工程实验室

Are water-repellent (anti-wetting)  
legs necessary to stand on water?

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It is generally believed that a water-repellent surface is necessary for small insects to stand on water. Through a combined experimental and theoretical study, we demonstrate that an object with hydrophilic surface can float with apparent contact angle greater than  $90^\circ$  due to edge effect. The apparent contact angle rises with increasing loading even to a value typically displayed only by superhydrophobic surfaces. On the basis of free energy minimization, two regimes are identified. When buoyancy controls, the meniscus meets the object with the intrinsic contact angle. As surface tension dominates, however, contact angle is regulated by total force balance.