

Invitation Report

-Key Laboratory of Green Process and Engineering, CAS

Speaker: Prof. Heng-Kwong Tsao (National Central University)

Prof. Yu-Jane Sheng (National Taiwan University)

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

Time: 2:30 (p.m.) July 18, 2011 (Monday)

Place: Meeting Room 312 IPE Mansion

Abstract:

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° 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.