

Abstract Submitted
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Electrowetting climbing of inclined water surfaces¹ JUNQI YUAN,
SUNG KWON CHO, University of Pittsburgh — It is well known that some small insects easily climb the inclined air-water interfaces simply by distorting the interfaces. This presentation will talk about bio-mimicking of the insect-climbing principle by electrically controlling the contact angle (so called electrowetting) and thus distorting the adjacent interfaces. For an experimental proof, we fabricated a small floating object whose sidewalls were covered with electrowetting electrodes. In response to the external voltage applied to the electrodes, the surfaces of the sidewalls can be switched from hydrophobic to hydrophilic states, resulting in interface distortions. It is confirmed that the interface distortions generate lateral forces that allow the floating object to climb inclined water surfaces. Detailed results along with effects of many parameters will be presented and discussed.

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