

Abstract Submitted
for the DFD06 Meeting of
The American Physical Society

Bouncing of a hydrophobic solid object upon impact with water surface DUCK-GYU LEE, HO-YOUNG KIM, School of Mechanical and Aerospace Engineering, Seoul National University — It is well known that a water drop impacting with a highly hydrophobic solid surface bounces. Here we show that a tiny hydrophobic solid object may bounce off liquid surface upon impact with the water pool. The impact behavior of such tiny solid with liquid is determined by surface tension, viscosity and density of the liquid, and size, density, hydrophobicity and impact velocity of the solid object. We show that depending on the impact conditions, the solid object may sink, oscillate on the surface, or bounce off. The regime map for such impact behavior is constructed using dimensionless numbers such as the Reynolds and Weber numbers. The implication of this phenomenon with the biological motility exhibited by insects that walk and jump on water is discussed.

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Date submitted: 05 Aug 2006

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