

Abstract Submitted  
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**Bouncing of a Droplet on Superhydrophobic Surface in AC Electrowetting**<sup>1</sup> KWAN HYOUNG KANG, SEUNG JUN LEE, JIWOON HONG, Pohang University of Science and Technology — Oscillation of a droplet is induced in ac electrowetting by time-dependent electrical wetting tension. A droplet placed on a superhydrophobic surface bounces up like a rubber ball when an ac signal is applied. The bouncing pattern is highly frequency dependent. We investigated how the shape deformation and bouncing of a droplet are affected by applied frequency. The droplet motion is analyzed with the spectral method. The droplet is modeled as a simple linear oscillator, and the mass and spring constants are determined based on analytical results. We found that bouncing occurs periodically at a resonance frequency of the droplet. The motion of a sessile droplet released from a fixed shape is analyzed based on the phase field method. The numerical results show qualitative agreement with the experimental results for a bouncing droplet. Details on the flow field inside a bouncing droplet will be discussed based on numerical results.

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