

Abstract Submitted
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Analysis of Electrowetting Dynamics with Level Set Method JUN KWON PARK, JIWOO HONG, KWAN HYOUNG KANG, Department of Mechanical Engineering, Pohang University of Science and Technology, San 31, Hyoja-dong, Pohang 790-784 — Electrowetting is a versatile tool to handle tiny droplets and forms a backbone of digital microfluidics. Numerical analysis is necessary to fully understand the dynamics of electrowetting, especially in designing electrowetting-based liquid lenses and reflective displays. We developed a numerical method to analyze the general contact-line problems, incorporating dynamic contact angle models. The method was applied to the analysis of spreading process of a sessile droplet for step input voltages in electrowetting. The result was compared with experimental data and analytical result which is based on the spectral method. It is shown that contact line friction significantly affects the contact line motion and the oscillation amplitude. The pinning process of contact line was well represented by including the hysteresis effect in the contact angle models.

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