Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

Droplet jumping by resonant AC electrowetting envisioning three-dimensional digital microfluidics[1] SEUNG JUN LEE, SANGHYUN LEE, KWAN HYOUNG KANG, Pohang University of Science and Technology (POSTECH) — We introduce droplet jumping by resonant AC electrowetting (DJ-RACE) to transport droplets to vertical direction, envisioning three-dimensional digital microfluidics. Inphase oscillatory actuation by resonant AC electrowetting allows droplets to store sufficient energy for jumping on their stretched surfaces by conventional electrowetting methods. The detailed jumping mechanism is explained in comparison to experimental results, and the actual droplet transport from the superhydrophobic bottom surface to higher level surfaces is demonstrated by several electrode configurations and actuation methods.

[1]This work was supported by the National Research Foundation of Korea (NRF) grant No.20090083510 funded by the Korean government (MEST) through Multi-phenomena CFD Engineering Research Center.

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Date submitted: 21 Jul 2010 Electronic form version 1.4