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Dynamic electrowetting on microstructured surfaces[1] SATOSHI NITA, JIAYU WANG, The University of Tokyo, MINH DO-QUANG, The Royal Institute of Technology, YU-CHUNG CHEN, YUJI SUZUKI, The University of Tokyo, GUSTAV AMBERG, The Royal Institute of Technology, JUNICHIRO SHIOMI, The University of Tokyo — Surface modification such as surface charging or microstructuring has been shown as an effective method to control static wetting, but its influence on dynamic wetting is still unclear. Previously, we found that the initial stage of droplet spreading can be significantly hindered by surface microstructures [1, 2], while previous experiments showed that the effect of surface charge on dynamic wetting on a flat surface is minor. Here, we combine microstructuring and electrowetting to further enhance the controllability of the dynamic wetting. Microstructures are fabricated on silicon wafers and the spontaneous spreading of a droplet is imaged with a high-speed camera. We reveal that the spreading rate sensitivity to surface charge increases in the presence of microstructures. Furthermore, numerical simulations solving Cahn-Hilliard/Navier-Stokes equations are performed and the effect of surface modification is quantified in terms of the contact-line friction.

[1] J. Wang, et al., Surface structure determines dynamic wetting. *Scientific reports* **5**, 8474 (2015).
[2] M. Do-Quang, et al., When and how surface structure determines the dynamics of partial wetting. *Europhysics letters* **110**, 46002 (2015).

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