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Highly selective creation of hydrophilic micro-craters on super hydrophobic surface using electrohydrodynamic jet printing[1] JAEHYUN LEE, SANGYEON HWANG, FARIZA DIAN PRASETYO, Sungkyunkwan University, VU DAT NGUYEN, Enjet Incorporation, JUNGWOO HONG, JENNIFER H. SHIN, Korea Advanced Institute Science and Technology, DOYOUNG BYUN, Sungkyunkwan University — Selective surface modification is considered as an alternative to conventional printing techniques in high resolution patterning. Here, we present fabrication of hydrophilic patterns on the super hydrophobic surface, which makes structure on the hydrophilic region. The super hydrophobic surface is able to be chemically changed to hydrophilic with alcohols. As a consecutive process, electrohydrodynamic (EHD) jet printing was utilized to fabricate local hydrophilic craters with 30-200 μm sizes. 3 kinds of target liquids were deposited well on hydrophilic region; PEDOT (poly 3,4 ethylenediocythiophene), polystyrene nanoparticles, and salmonella bacteria medium. Additionally, qualitative analysis were presented for modification mechanism and surface properties on super hydrophobic/hydrophilic by analysis of surface energy with contact angle, SEM (scanning electron microscopy) image, and SIMS (secondary ion mass spectroscopy) analysis. This new simple modification method provides possibility to be utilizing in bio-patterning engineering such as cell culturing microchip and lab on a chip.

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