Supporting Information

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Fig. S1. 48-h *P. aeruginosa* (PA-14) biofilm puddles grown at room temperature on a superhydrophobic nanopost array silicon wafer, subsequently tilted to observe biofilm adhesion. The puddles consist of TB with 1% initial seeding concentration of *P. aeruginosa* LB culture. Biofilm shows complete wetting of the surface and leaves a film of slime as it is tilted. Silicon microstructure array fabrication in methods (1). 1 Sugawara M (1998) *Plasma Etching: Fundamentals and Applications* (Oxford University Press, New York).



Fig. 52. Early stages of static biofilm growth on porous PTFE and SLIPS. Fluorescence micrographs depict growth of PA-14 biofilm on the two substrates at 3, 6, and 9 h following inoculation. The medium is static; i.e., without flow that can serve to remove biofilm from SLIPS, and some bacteria are observed on both substrates. However, dense and three-dimensional growth is only seen on the control PTFE, while a submonolayer of bacteria is observed on SLIPS that visibly drifts with convective currents in the liquid, consistent with nonattachment. Scale bar = $30 \mu m$.



Fig. S3. Split-frame still images and movie showing evaporation dynamics of *P. aeruginosa* culture droplets on a superhydrophobic PTFE porous surface and a PTFE SLIPS surface infused with Krytox 103. The pinning characteristics as well as the stains remaining on the surfaces upon drying indicate the level of adhesion between the bacterial droplet and the substrate. In the absence of contact line pinning, the droplet should follow a nearly constant contact angle mode of evaporation (1), without the formation of a coffee ring stain (2). The absence of the coffee ring formation also indicates that the adhesion of the bacteria on the SLIPS is small compared to the forces imparted by the meniscus of the droplet.

I Picknett RG, Bexon R (1977) Evaporation of sessile or pendant drops in still air. J Colloid Interf Sci 61:336-350.

2 Deegan RD, et al. (1997) Capillary flow as the cause of ring stains from dried liquid drops. Nature 389:827-829.



Fig. S4. Due to the low adhesion of the biofilm-forming bacterial droplet on the SLIPS, the dried bacteria following evaporation of the droplet can be removed from SLIPS simply by adhesive tape. In contrast, an evaporating droplet on the porous Teflon is strongly pinned, leading to the formation of an irremovable coffee ring (1).

1 Deegan RD, et al. (1997) Capillary flow as the cause of ring stains from dried liquid drops. Nature 389:827-829.



Fig. S5. SLIPS stability in the flow. The tilt angle of water droplets on the surface of the SLIPS was measured over the course of 7 d under water flow of 10 mL/min (1 cm/s) through the dual chamber. The chamber was opened every 24 h, when $30-\mu$ L water droplets were applied to the SLIPS at 0° (horizontal), and the angle was slowly adjusted until the droplet began to slide. The statistically unchanged sliding angle over the 7 d time period indicates that SLIPS functionality does not degrade under prolonged flow. Error bars = standard deviation; n = 6.



Fig. S6. SLIPS stability in extreme environmental conditions. As measured by the sliding angle of $30-\mu$ L drops of water (A) and of octane (B), the slippery property of the SLIPS surface was not degraded following 7 d submersion in acid (pH < 1), base (pH = 14), brine (10× NaCl concentration of oceanic water), and 1000 kW/m² UV irradiation—equivalent to one year of sun exposure (see Movie S5). Error bars = standard deviation; n = 3.



Movie S1. 48-h *P. aeruginosa* (PA14) biofilm puddles grown at room temperature on a superhydrophobic nanopost array silicon wafer, subsequently tilted to observe biofilm adhesion. The puddles consist of TB with 1% initial seeding concentration of *P. aeruginosa* LB culture. Biofilm shows complete wetting of the surface and leaves a film of slime as it is tilted.

Movie S1 (WMV)



Movie S2. *P. aeruginosa* biofilm puddles grown on a PTFE porous surface (*Left*) and a PTFE SLIPS surface infused with Krytox 103, each tilted to observe biofilm adhesion. Biofilm grown on the control substrate shows complete wetting of the surface and remains pinned. In contrast, biofilm on the SLIPS substrate slides readily without leaving any slime film or other visible residue behind.

Movie S2 (WMV)



Movie S3. Split-frame still images and movie showing evaporation dynamics of *P. aeruginosa* culture droplets on a superhydrophobic PTFE porous surface and a PTFE SLIPS surface infused with Krytox 103. The pinning characteristics as well as the stains remaining on the surfaces upon drying indicate the level of adhesion between the bacterial droplet and the substrate. In the absence of contact line pinning, the droplet should follow a nearly constant contact angle mode of evaporation (1), without the formation of a coffee ring stain (2). The absence of the coffee ring formation also indicates that the adhesion of the bacteria on the SLIPS is small compared to the forces imparted by the meniscus of the droplet.

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2 Deegan RD, et al. (1997) Capillary flow as the cause of ring stains from dried liquid drops. Nature 389:827-829.

Movie S3 (WMV)



Movie 54. Due to the low adhesion of the biofilm-forming bacterial droplet on the SLIPS, the dried bacteria following evaporation of the droplet can be removed from SLIPS simply by adhesive tape. In contrast, an evaporating droplet on the porous Teflon is strongly pinned, leading to the formation of an irremovable coffee ring (1).

1 Deegan RD, et al. (1997) Capillary flow as the cause of ring stains from dried liquid drops. Nature 389:827-829.

Movie S4 (WMV)

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Movie S5 (WMV)



Movie S6. Water droplet mobility on a stable SLIPS submerged in hexadecane. Movie S6 (WMV)