Electronic Supplementary Material (ESI) for Soft Matter.

"Direct observation of drops on slippery lubricant-infused surfaces"

by

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Fabrication of SU-8 pillars. The pillar structures were prepared via photolithography using a SU-8 photoresist (Microchem). Glass slides with a thickness of 170 µm were cleaned with acetone in an ultrasound bath and dried in a vacuum oven (Heraeus) at 170 °C. The SU-8 2025 (or SU-8 2005) photoresist was first mixed with the hydrophobic perylenemonoimide dye (PMI) at a concentration of 0.05 mg/mL[44]. Then, the mixture was spin-coated onto the glass slides. The substrates were then soft baked at 95 °C for 4 min and allowed to slowly cool down for 1 hour. Then they were exposed to UV light (mercury lamp at 350 W) for 35 s (or 30 s) using a Karl-Suss mask aligner and baked at 95 °C for 4 min. The substrates were slowly cooled for 12 h and finally developed with a SU-8 developer (Microchem) and rinsed with 2-propanol. The SU-8 surfaces were treated overnight with 1 M HCl and 0.1 M NaOH at room temperature to hydrolyse the surfaces. Resulting dimensions of the pillars were: center to-center distance 40 µm, diameter 10 µm, and height 10 µm, giving an area fraction of f_{SU8} = 5%. Finally, the surfaces were hydrophobised with (1H,1H,2H,2H)-perfluorooctyl-trichlorosilane via chemical vapor deposition during 3 h, after activation by O_2 plasma for 0.6 minutes at 150 W. This process increases the density of –OH groups which are anchoring points for the fluorosilane. For this purpose, the substrates and an open glass vessel containing 0.1 mL of the volatile silane were place in a desiccator for 3 hours. The desiccator was evacuated for a few seconds to increase the vapour pressure of the silane. After hydrophobisation, vacuum was applied for one hour to remove unreacted silane residues.

Interfacial tension.

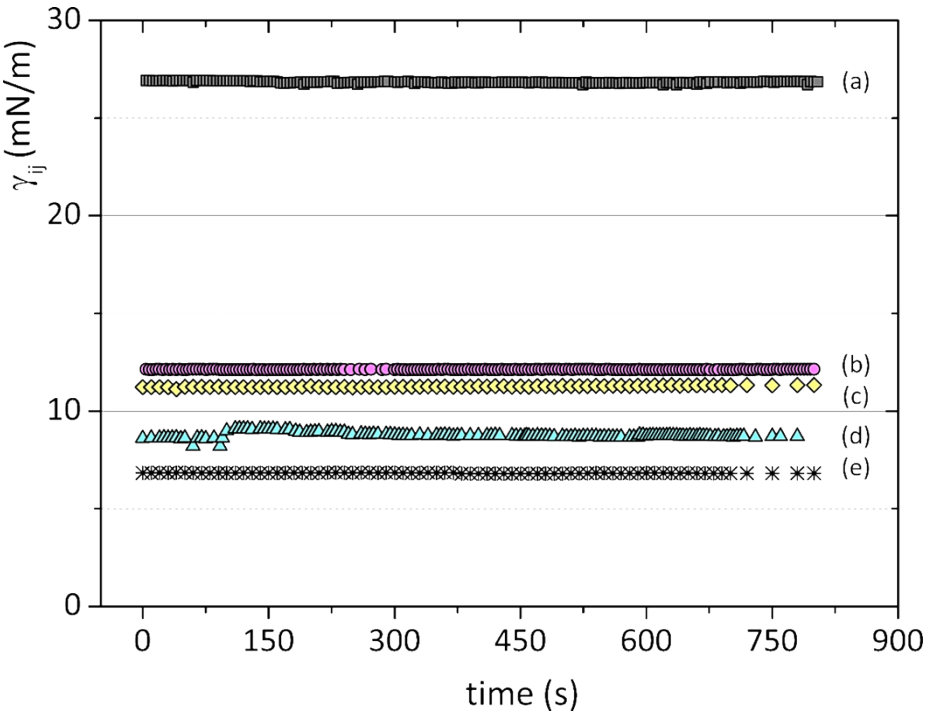


Figure S1. Interfacial tension (γ_{ij}) versus time of a) ethylene glycol-FC70, b) peanut oil-FC70, c) water-ionic liquid, d) water-decanol and e) hexadecane-FC70 systems.

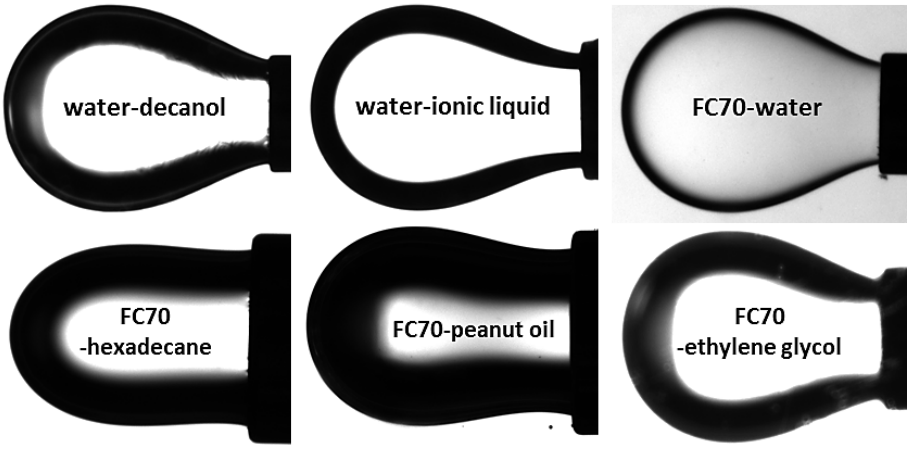
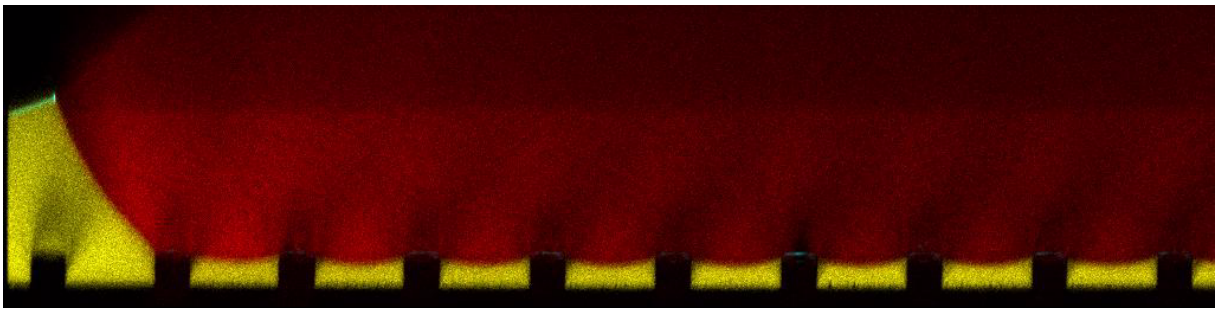
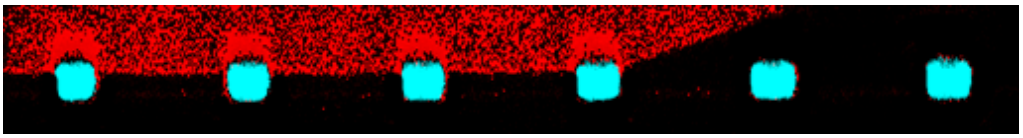


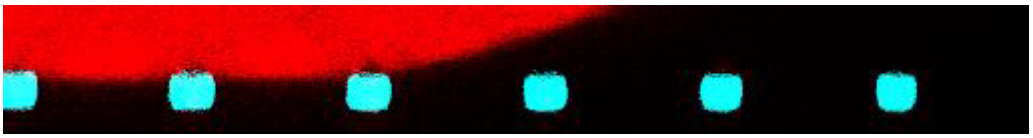
Figure S2. Snapshots of liquid drops used to measure the interfacial tension



Video 1: Evaporation of a water drop placed on a slippery micropillar array. In real time the movie takes 50 s. Red: fluorescently labeled water; yellow: fluorescently labeled decanol. Image size: 387.5*96.6µm².



Video 2: Time evolution of the receding contact line. Confocal microscopy video monitoring the contact angle of a water drop (red) as it recedes because of evaporation on an FC70-impregnated micropillar array (blue). In real time the movie takes 560 s.



Video 3: Time evolution of the advancing contact line. Confocal microscopy video monitoring the advancement of a drop on an FC70-impregnated micropillar array. In real time the movie takes 0.2 s.