

Supplemental Information: One-step in-mould modification of PDMS surfaces and its application in the fabrication of self-driven microfluidic channels

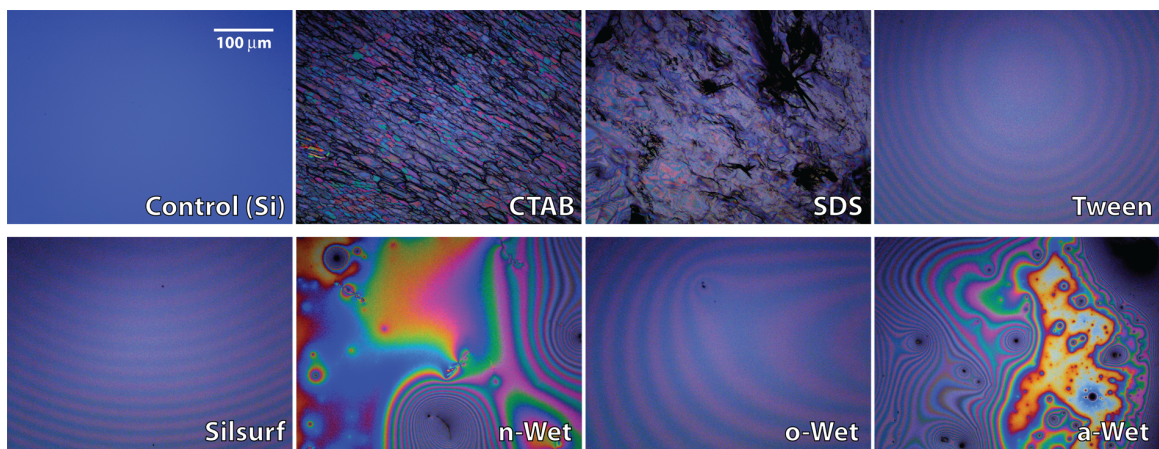
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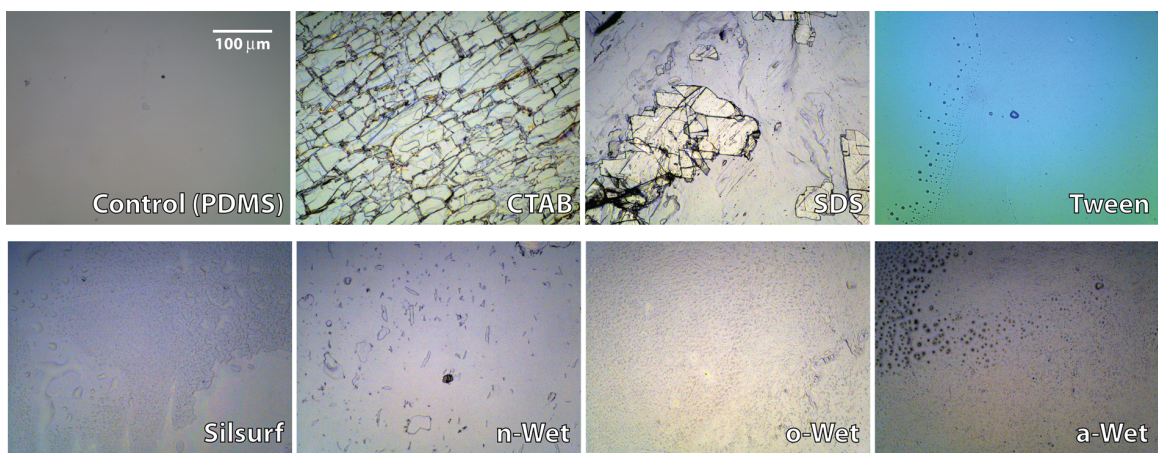
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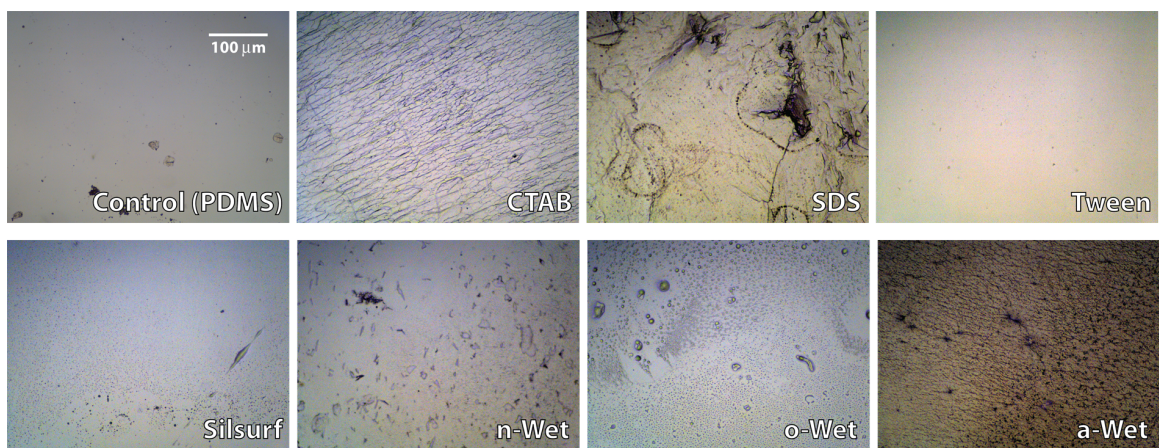
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Supplemental Figure 1. Optical microscopy images of surfactant thin films cast onto Teflon moulds adhered to silicon wafers. Small defects were observed on the surfactant surfaces due to dust particles in the environment.



Supplemental Figure 2. Optical images of surfactant films transferred onto PDMS array surfaces during the vulcanization step. The surfaces evidence structuring due to ionic surfactant crystal and non-ionic surfactant multilayer transfer.



Supplemental Figure 3. Optical microscopy images of surfactant modified PDMS surfaces after soaking in water for 20 hours. Changes in morphology are observed on the surfaces after soaking due to hydration and solvation of films or surfactant chain rearrangement.

Supplemental Video 1. Demonstration of operation of a microfluidic channel fabricated using the one-step in-mould approach without the use of a bounding mask during the a-Wet surfactant casting. Note that a “streak” is observed across the PDMS, which represents the surfactant flow during the prepolymer application. Also note that there is leakage through the end reservoir due to the hydrophilic nature of the flat surface outside the channel, which was functionalized by the flowing surfactant.

Supplemental Video 2. Demonstration of the capillary force-driven filling of linear PDMS microfluidic channels modified with a-Wet surfactant using the one-step in-mould approach.

Supplemental Video 3. Demonstration of the capillary force-driven filling of serpentine PDMS microfluidic channels modified with a-Wet surfactant using the one-step in-mould approach.

Supplemental Video 4. Demonstration of the capillary force-driven filling against gravity of PDMS microfluidic channels modified with a-Wet surfactant using the one-step in-mould approach.

Supplemental Video 5. Demonstration of lack of capillary force-driven filling of unmodified PDMS microfluidic channels.