Supplementary Information

Flexible and Mechanically Robust Superhydrophobic Silicone Surfaces with Stable Cassie-Baxter State

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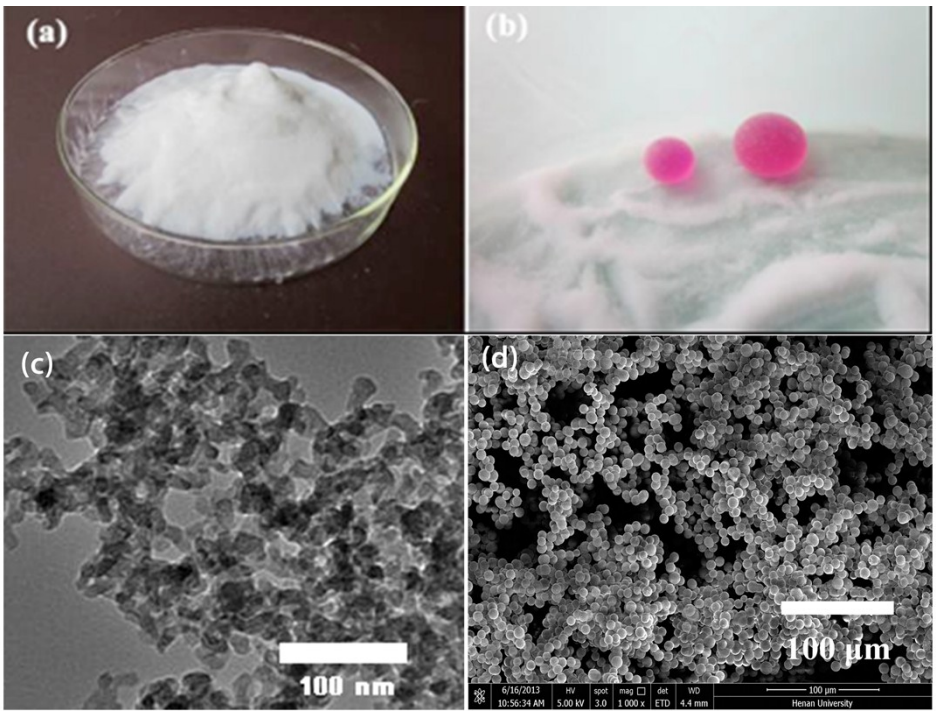

Figure S1. (a) Photograph of the obtained hydrophobic SiO_2 nanoparticles powder. (b) Water droplets coated with hydrophobic SiO_2 nanoparticles demonstrate spherical shapes (the water was dyed red for easy observation). (c) TEM images of the SiO_2 nanoparticles. (d) SEM images of the SiO_2 microparticles.

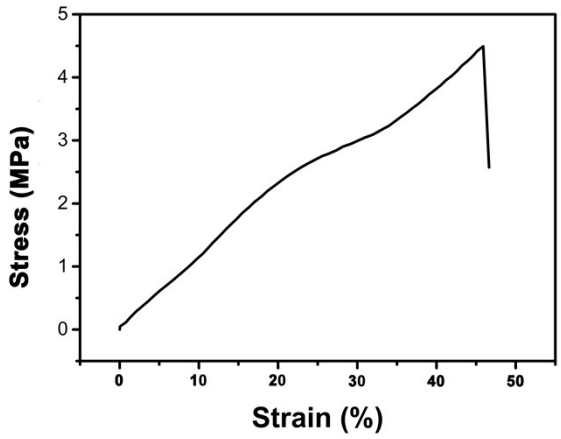

Figure S2. The stress–strain curves of elastic silicone rubber.

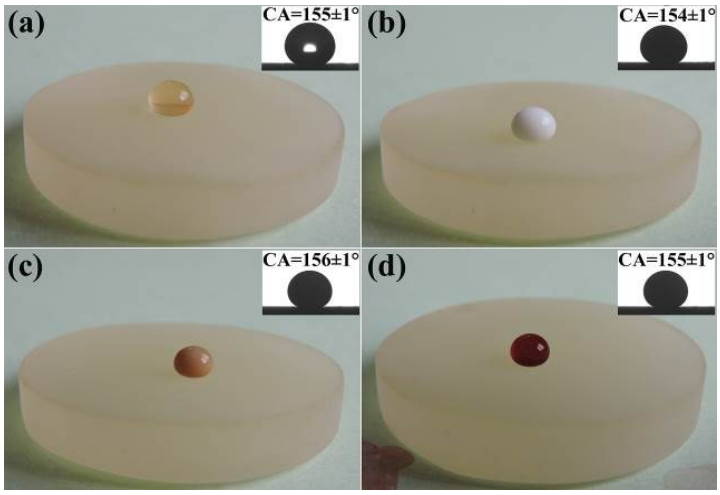

Figure S3. Liquids repellency of the silicone. (a) Juice, (b) coffee, (c) milk and (d) blood.

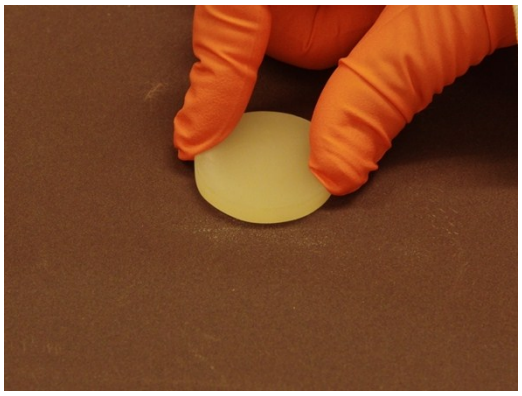

Figure S4. Mechanical abrasion by sandpaper. The silicone monolith can sustain its super liquid-repellency even been worn out by sandpaper.

Figure S5. Extremely low temperature durability. (a) Photograph of the silicone immersed in liquid nitrogen for about 30 s. (b) The sample was covered with ice after taken out from liquid nitrogen. (c) The recovery of its superhydrophobicity when the ice disappeared (CA = 153 ± 1°).

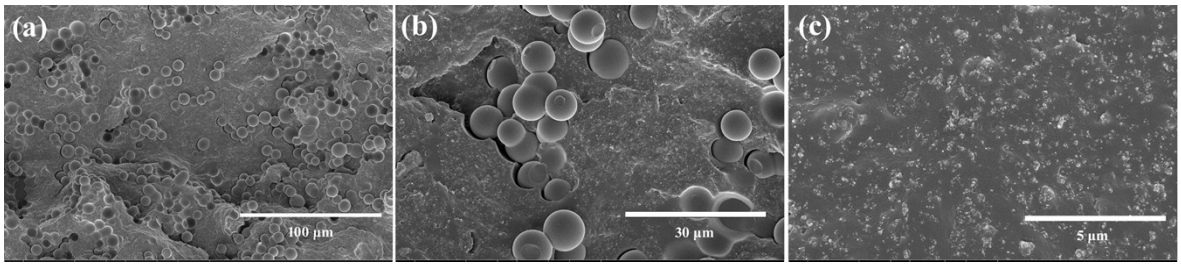

Figure S6. SEM images of the obtained silicone surface before sandpaper abrasion.

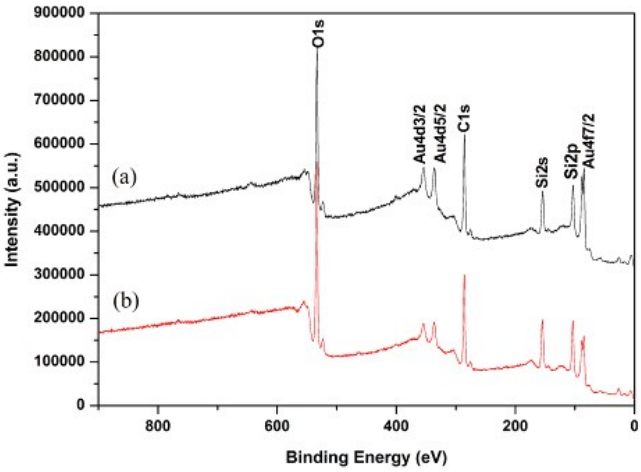

Figure S7. XPS survey-scan of the obtained silicone surface. (a) Before and (b) after flame heat treatment.

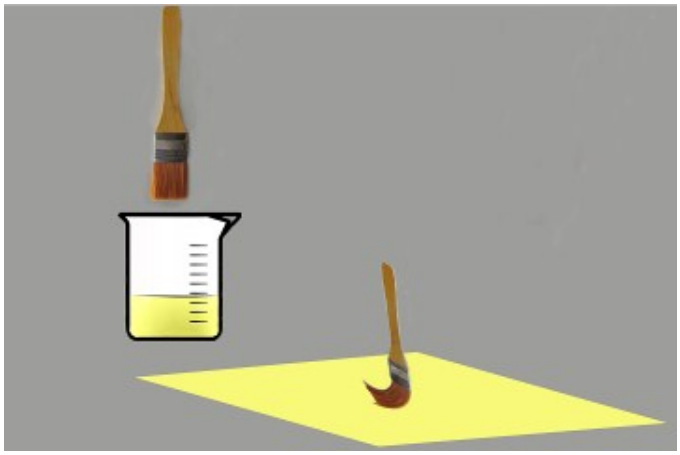

Figure S8. Schematic of the brush-painting process.

Movie Captions

Movie 1

Blood resistance test. This movie demonstrates no blood adhesion on the sample surface after the immersion in animal blood.

Movie 2

Stable Cassie-Baxter state test.

Movie 3

High speed video of water dropping test on bulk silicone surface. Water droplet was dropped from a height of 35 mm (tip to the surface) and the droplet size is around 7 μL.

Movie 4

Water dropping test on silicone. If a water droplet was dropped from a certain distance (2.5 mm), it will bounce away.

Movie 5

If a water droplet was put carefully on the flame-treated surface, it will slide away.

Movie 6

The dynamic water contact angle measurement.

Movie 7

Flame heat treatment. After heated over the flame, the water-repellency increases with water CA value about 165 ± 1° and SA about 0°.

Movie 8

Water droplets impact test. The bulk silicone was exposed to long-term water droplets striking and kept its superhydrophobicity.

Movie 9

Durable superhydrophobicity test. The silicone surface sustained its water-repellent property after damaged by knife-scratch, finger-wipe and adhesive tape peel.

Movie 10

Sandpaper abrasion test.

Movie 11

Self-cleaning test in air.

Movie S12

Self-cleaning test under paraffin oil.

Movie S13

Water-repellent test under paraffin oil.