Supporting information

Large-scale fabrication of waterborne superamphiphobic coatings for flexible applications

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Supplementary Figures

Figure S1 Optical photographs of SiO_2 Sol (hydrolysis time was 36 h)

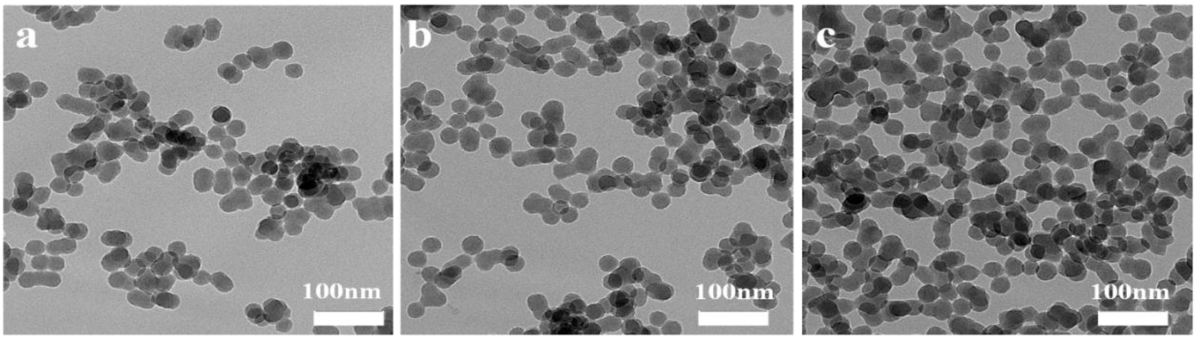

Figure S2 TEM images of SiO_2 Sol for different hydrolysis time. (a) 12 h. (b) 36 h. (c) 60h.

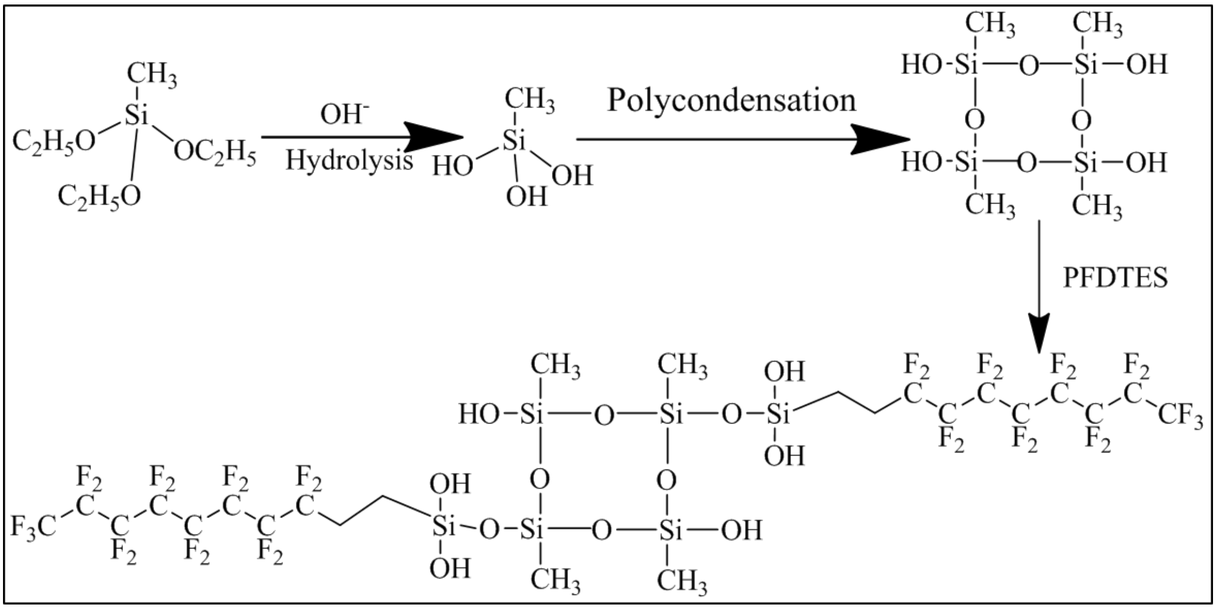

Figure S3 Schematic of chemical bond change during coating preparation.

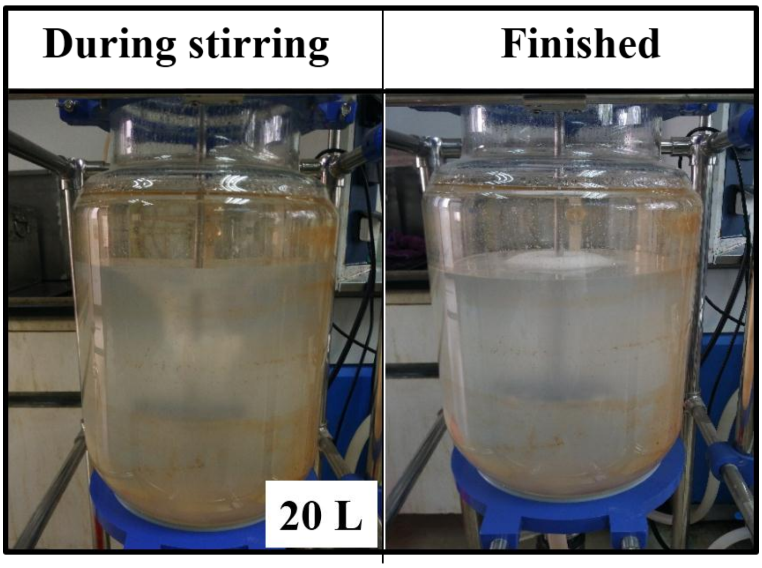

Figure S4 Optical photographs of large-scale fabrication

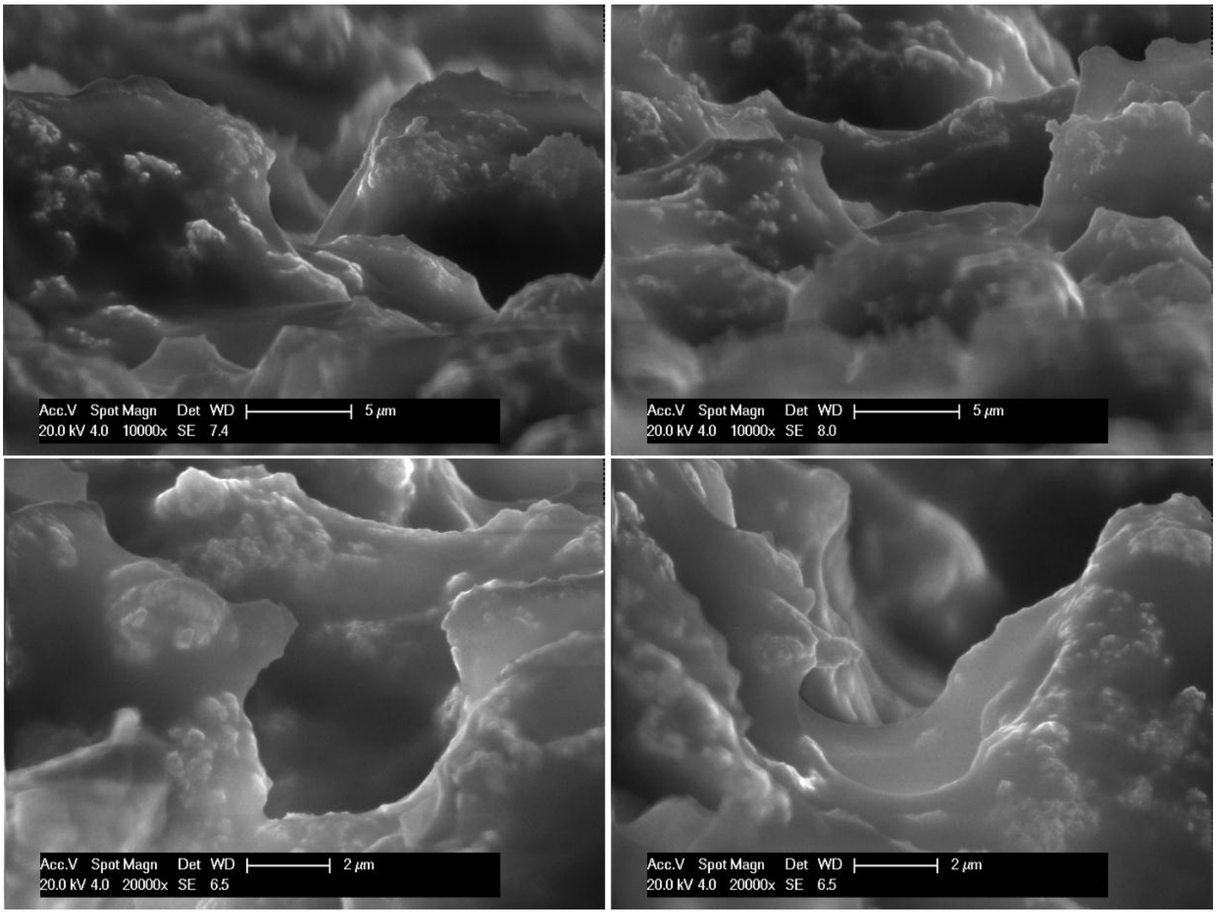

Figure S5 Fracture surface morphology of the superamphiphobic coating

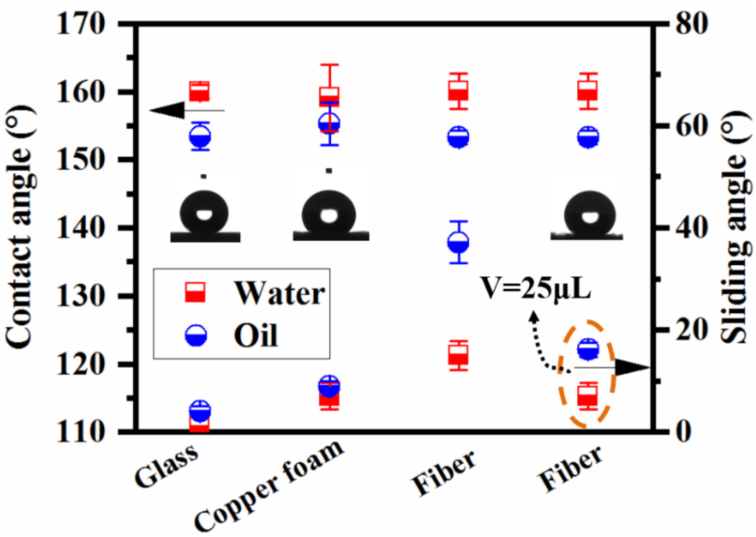

Figure S6 Water and oil contact angle and sliding angle on different substrates (insert: water contact angle images).

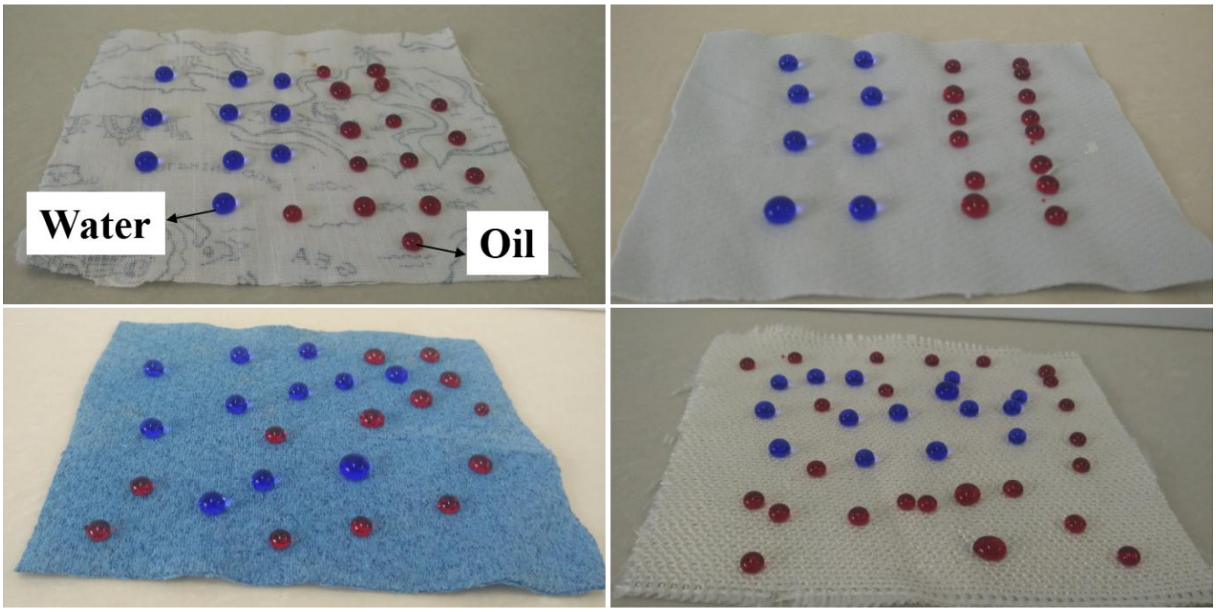

Figure S7 Optical photographs of water and oil on different commercial fabrics

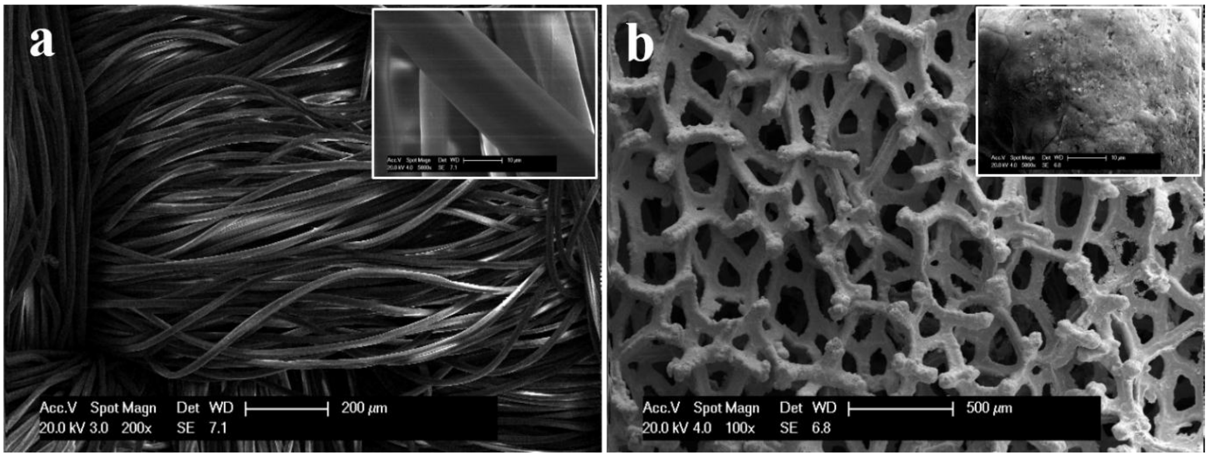

Figure S8 The original SEM images of polyester fiber (a) and copper foam (b)

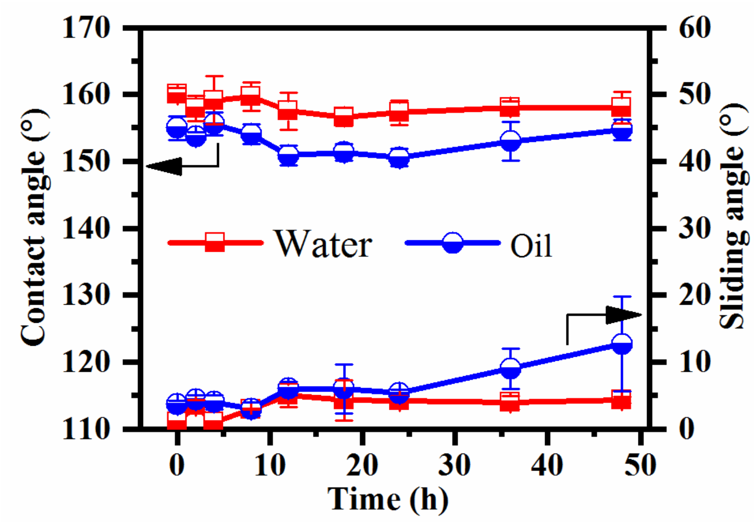

Figure S9 Contact angles and sliding angles change with different heating time under 150℃

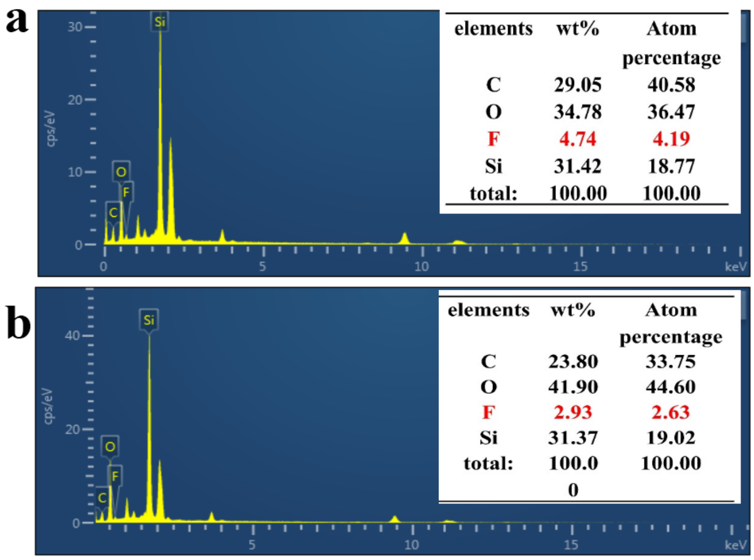

Figure S10 Energy dispersive spectrometer (EDS) of the coating (a) and after 300℃ treated (b).

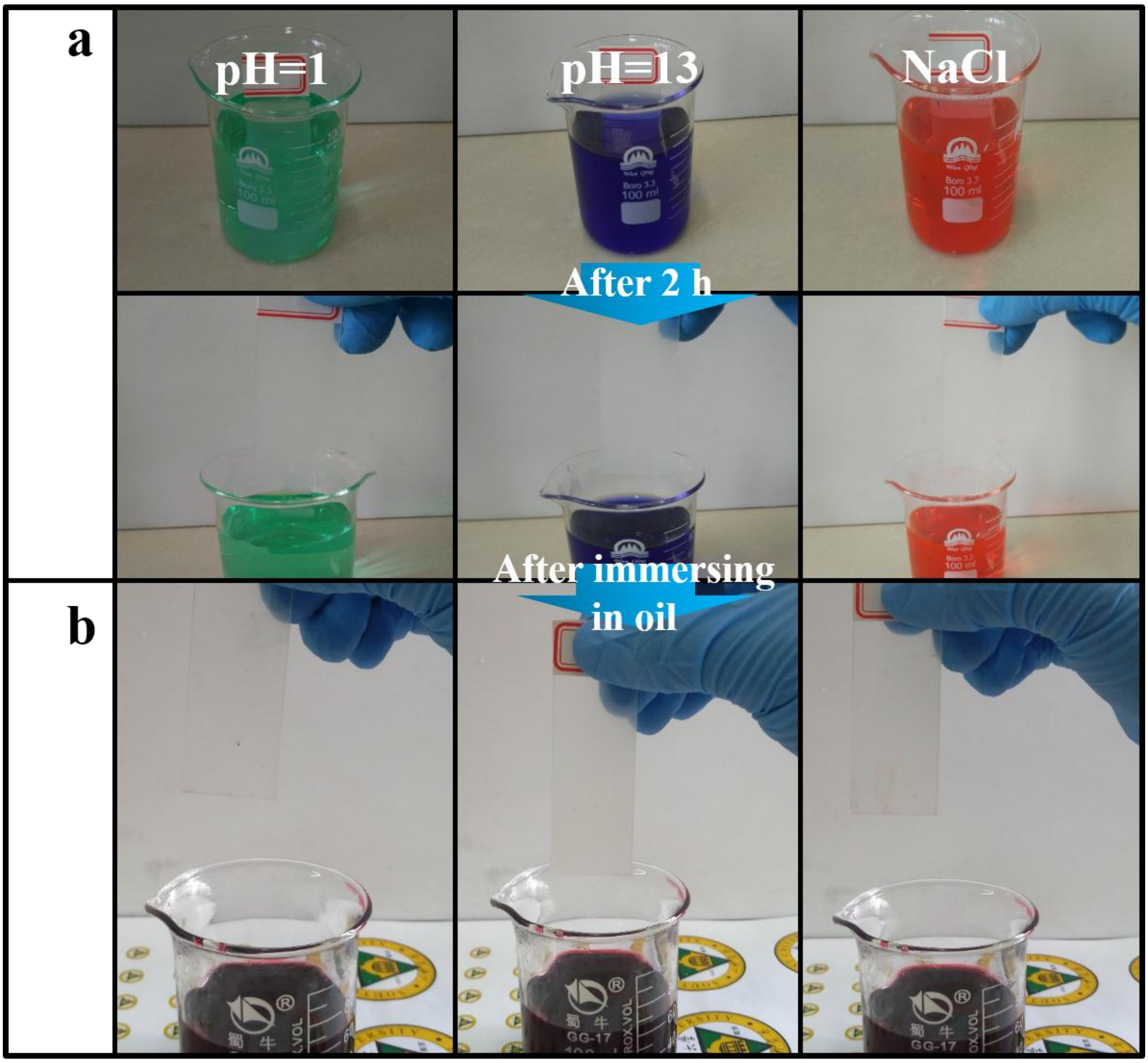

Figure S11 (a) Photographs of coatings immersed in different corrosive solutions; (b) photographs of immersed coatings after immersing in oil. (HCl dyed green by $NiSO_4$; NaOH dyed blue by bromocresol green; NaCl dyed red by ink and oil dyed red by oil red)

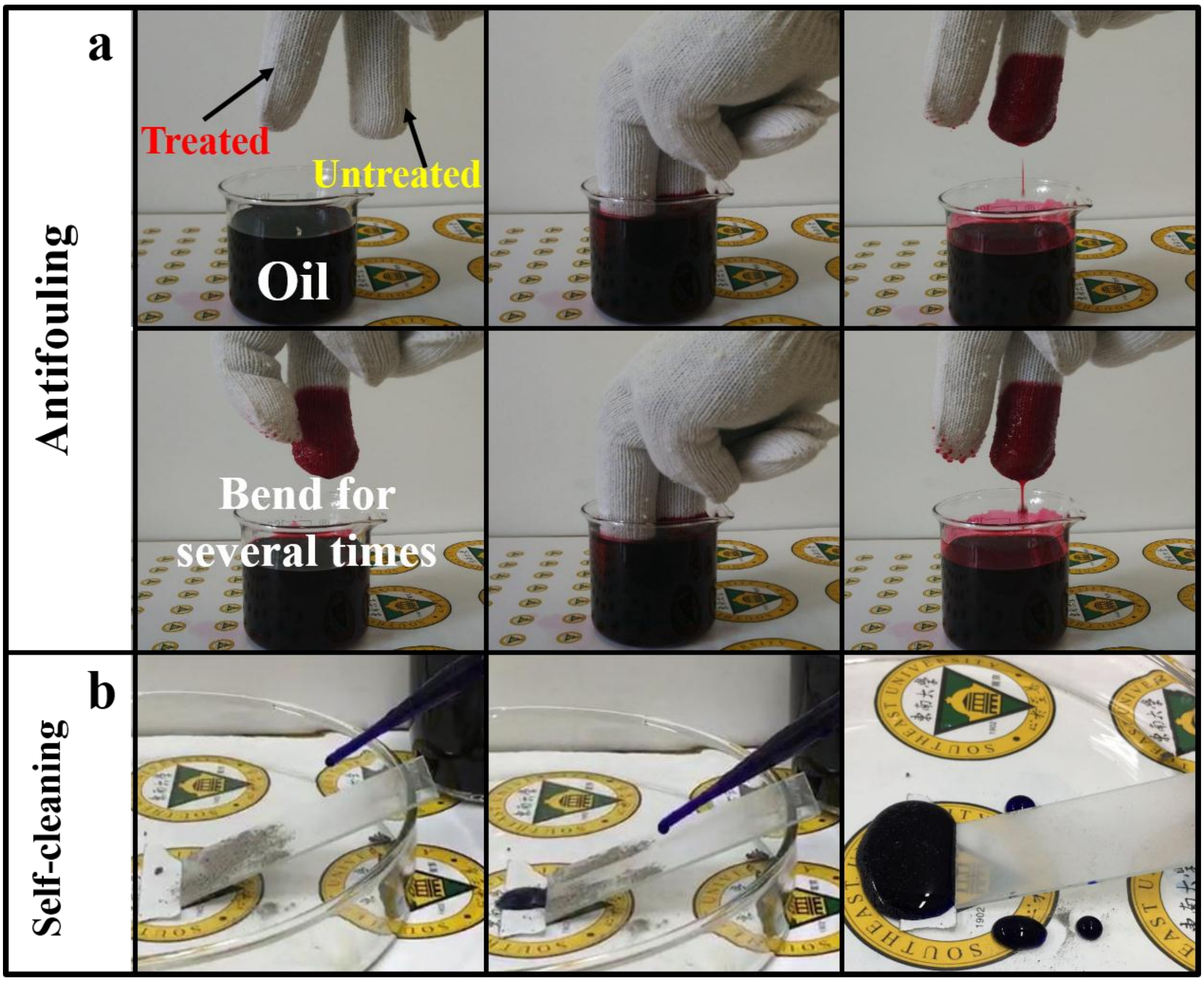

Figure S12 (a) Antifouling properties of the coating (The oil was dyed red. Index finger was treated and middle finger was untreated). (b) self-cleaning properties of the coating (The sludge powder was used as model dirt and the water was dyed blue)

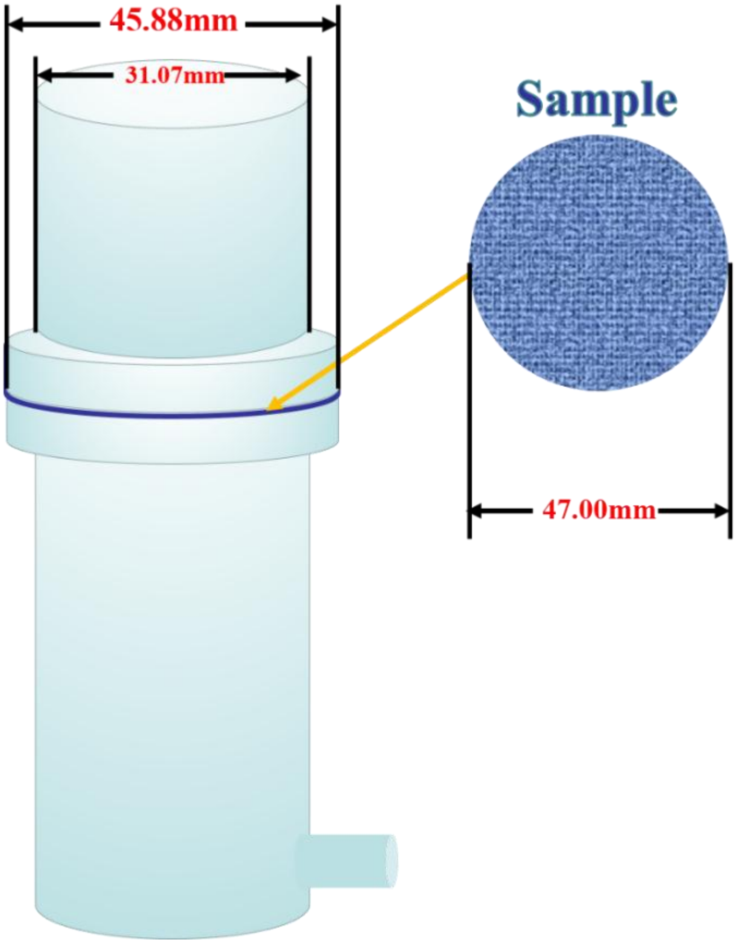

Figure S13 Date of damp-proof equipment and sample.

Movie S1

Water (dyed bule) and oil (dyed red) droplets roll off from glass, copper foam and polyester fiber.

Movie S2 and Movie S3

Self-cleaning properties test. The sludge powder was used as model dirt and the water was dyed blue (**S2**). Sludge powder containing oil fouling (the mixture of edible oi and sludge powder) roll-off from the superamphiphobic surface (**S3**)

Movie S4

Damp-proof test on polyester fiber. Left position (untreated) and right position (treated). Two humidifiers were used to transport vapour to glass tubes.