

Supporting Information

Development of Durable, Fluorine-free and Transparent Superhydrophobic Surfaces for Oil/water Separation

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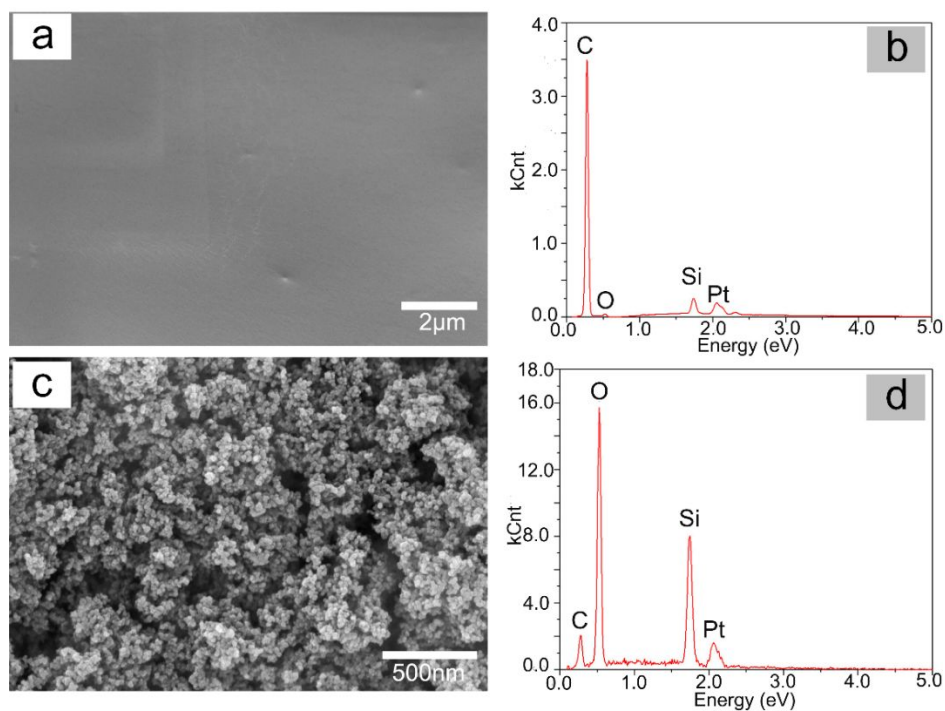


Figure S1. (a, b) The SEM image and EDX analysis of Super 75 located on the silicon wafer. (c, d) The SEM image and EDX analysis of hydrophobic SiO₂ nanoparticles (AEROSIL R972) located on the silicon wafer.

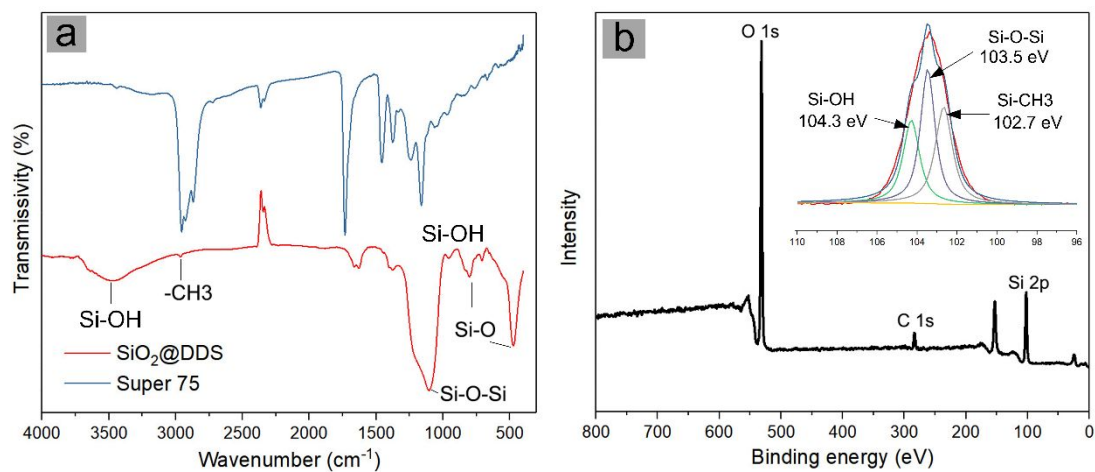


Figure S2. (a) FTIR spectra of Super 75 and hydrophobic SiO₂ nanoparticles. (b) XPS spectrum of as-prepared coating and the inset is XPS high resolution spectrum of Si 2p.

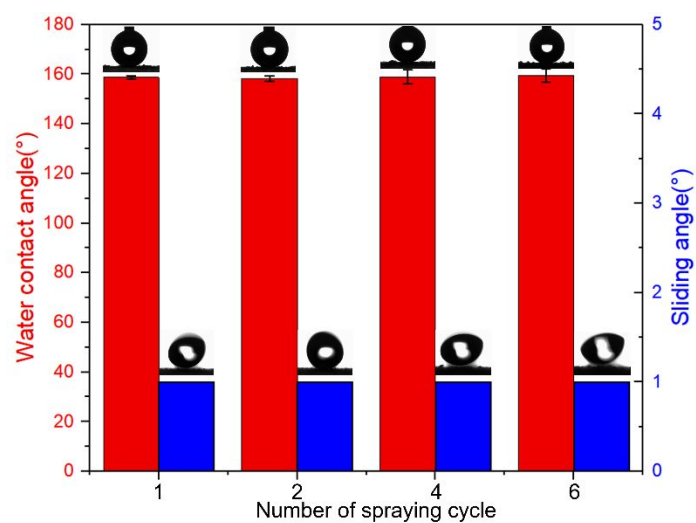


Figure S3. The water contact angle and sliding angle of coated glass slides with different spraying cycles.

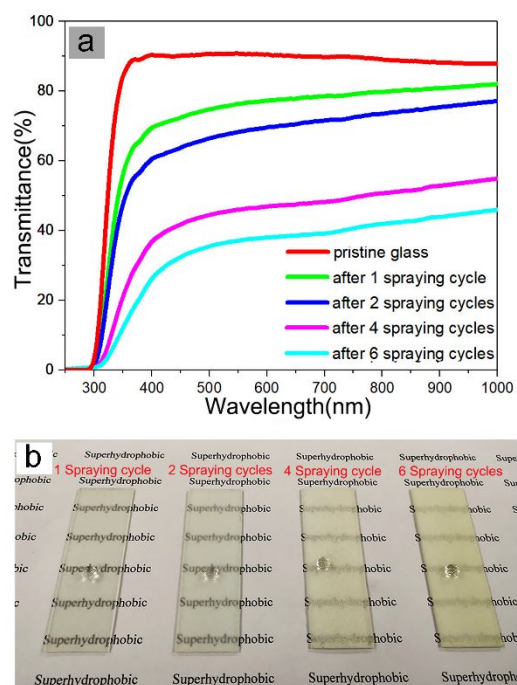


Figure S4. The (a) transmittance curves and (b) optical images of coated glass slides with different spraying cycles.

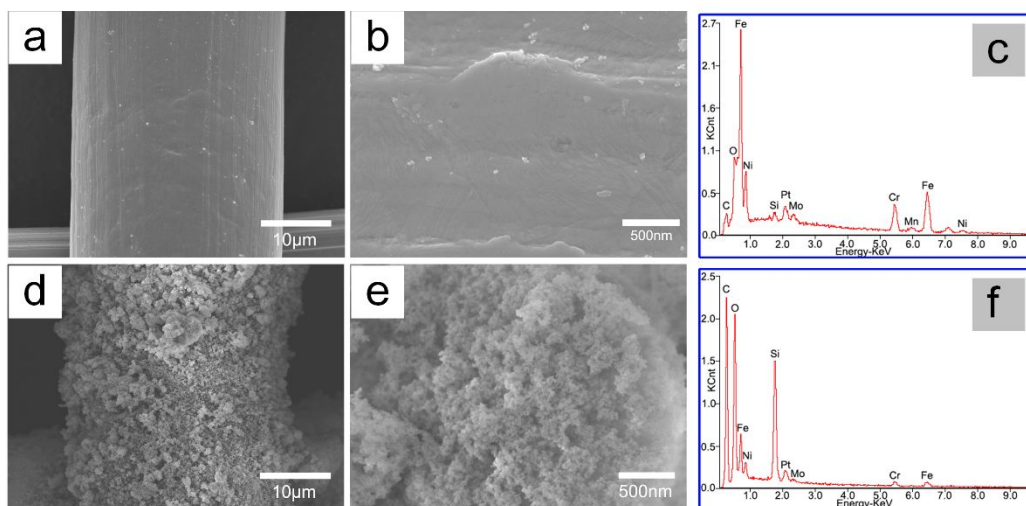


Figure S5. The SEM images of (a, b) pristine mesh and (d, e) coated mesh. The EDX measurements of (c) pristine and (f) coated mesh.

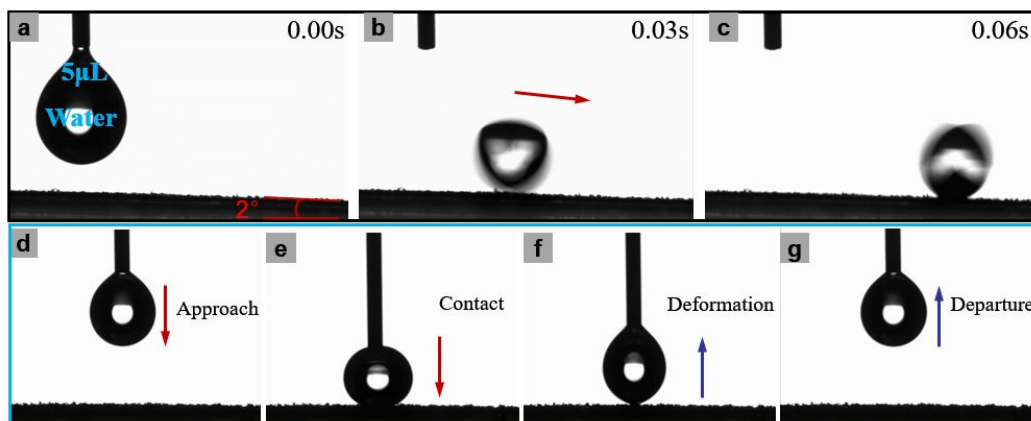


Figure S6. (a-c) Water droplet rolling on the as-prepared mesh surface with a tilted angle of $\sim 2^\circ$.

(d-g) Water droplet making contact and losing contact with the as-prepared mesh surface.

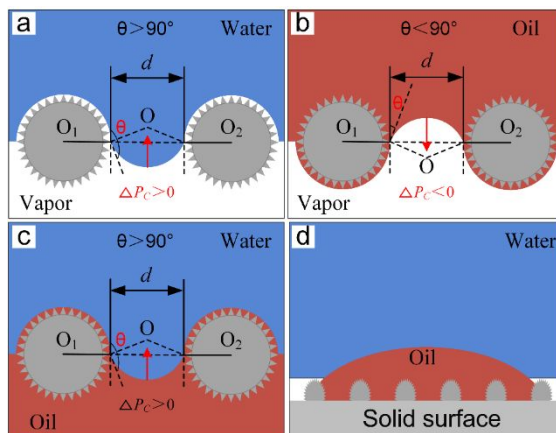


Figure S7. Schematic of separation mechanism of as-prepared porous superhydrophobic and superoleophilic materials. (a) The water cannot spontaneously permeate through the surface due to superhydrophobicity ($\Delta P_c > 0$). (b) The oil can spontaneously pass through the surface due to superoleophilicity ($\Delta P_c < 0$). (c) The water cannot spontaneously permeate through the surface that immersed in oil due to underoil superhydrophobicity ($\Delta P_c > 0$). (d) The oil can spontaneously pass through the surface that immersed in water due to underwater superoleophilicity.