

Supporting Information

**Rapid Deposition of Superhydrophilic Stalagmite-like
Protrusions for Underwater Selective Superwettability**

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Tables:

Table S1. The corresponding separation efficiencies and the masses of oil before and after separation processes in different solvents.

Organic oils	Solution	m₀ (g)	m₁ (g)	η (%)
Soybean oil	Water	8.06 ± 0.02	7.99 ± 0.02	99.08 ± 0.2
Soybean oil	1M H ₂ SO ₄	8.02 ± 0.01	7.83 ± 0.02	97.56 ± 0.1
Soybean oil	Saline water	8.04 ± 0.02	7.96 ± 0.02	99.00 ± 0.2
Hexane	Water	8.58 ± 0.02	8.26 ± 0.02	96.36 ± 0.2
Dodecane	Water	8.02 ± 0.01	7.90 ± 0.02	98.43 ± 0.1

Figures:

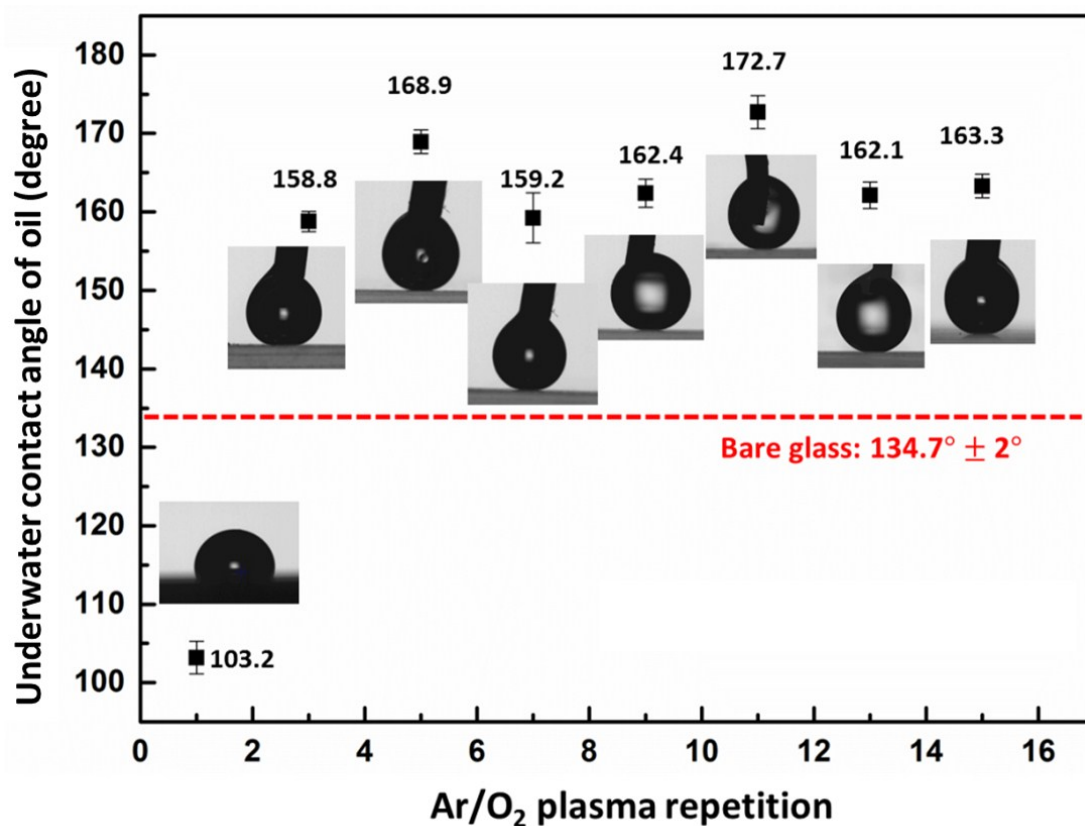


Fig. S 1. Measurements of underwater dynamic advancing contact angle toward soybean oil droplets for different numbers of repetition under atmospheric pressure plasma. The starting volume of the oil droplet was approximately 6 μ L, and additional 2 μ L was slowly added. The final value of the contact angle was recorded (i.e. the maximum angle). The substrates of tested samples are silicon wafer. The size of each tested sample is 1.5 x 1.5 cm². One repetition takes 1.8 sec.

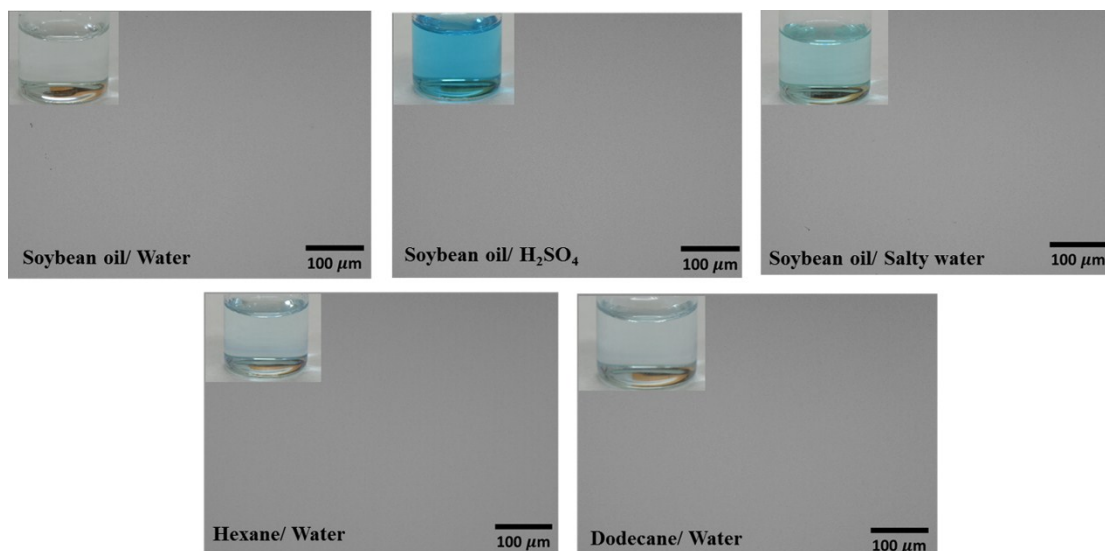


Fig. S 2. Optical microscopic images and photographs show oil contaminated water solutions after oil/water separation.

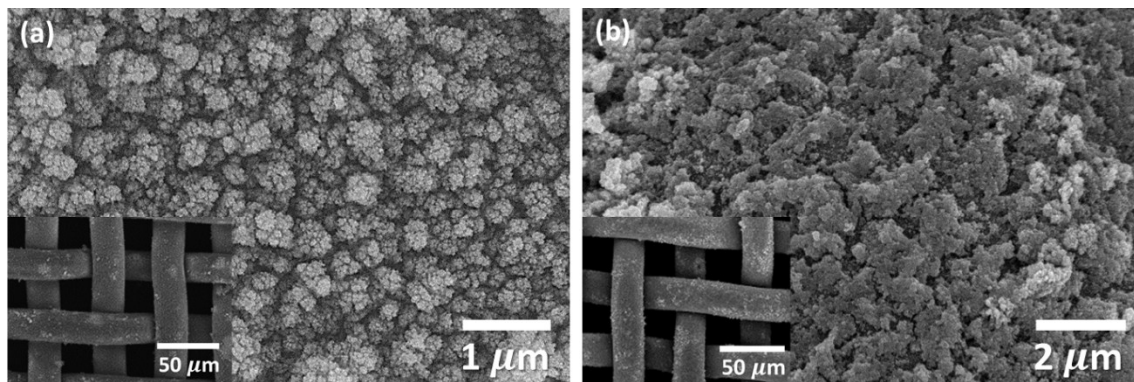


Fig. S 3. SEM images of coated tungsten oxide protrusions (a) before separation and (b) after separation and followed by washing under strong water stream.

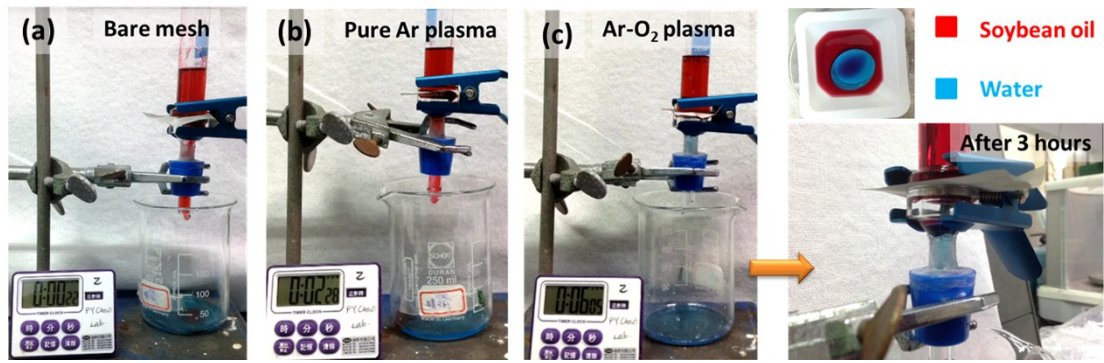


Fig. S 4. Photographs show the oil-water separation process by three different stainless steel meshes.

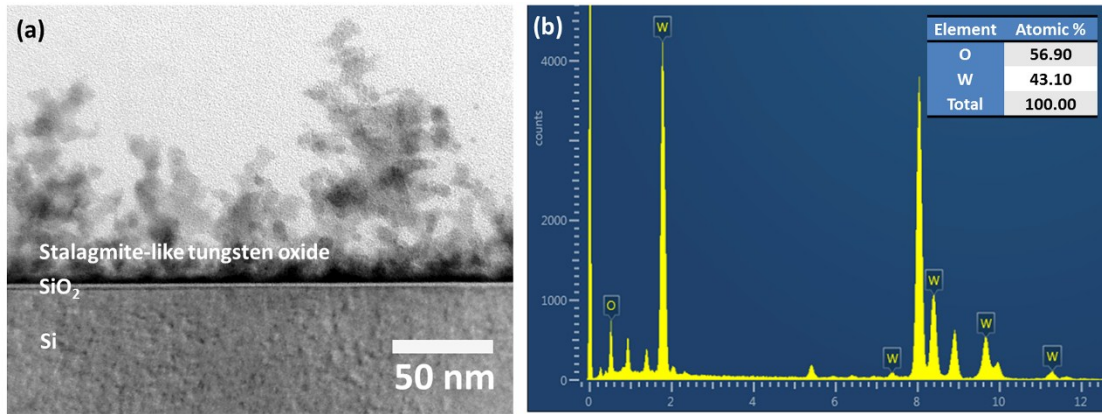


Fig. S 5. (a) TEM image and (b) EDX analysis of as-deposited stalagmite-like tungsten oxide film on the silicon surface.

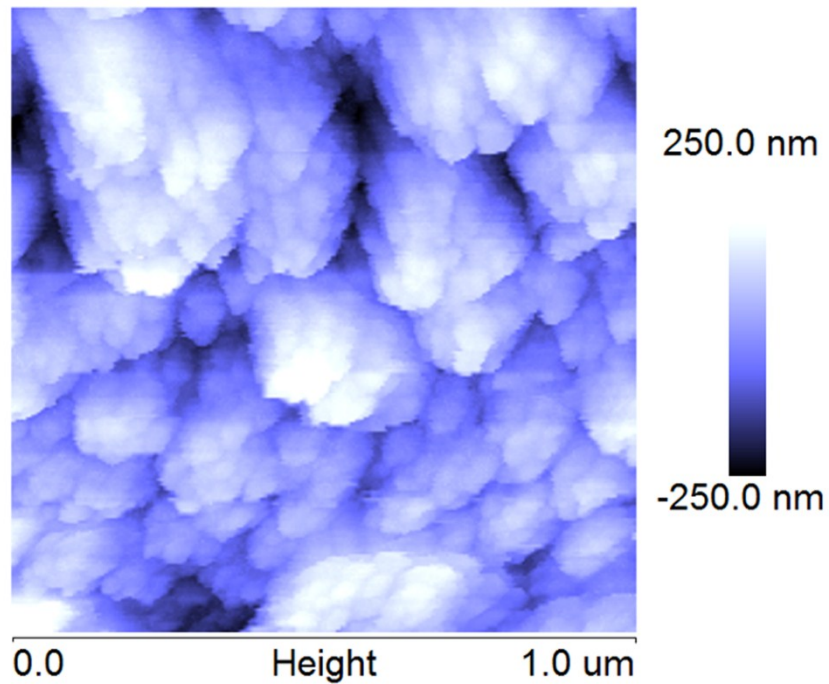


Fig. S 6. The representative AFM image of the as-synthesized tungsten oxide protrusions: the average surface area calculated from three regions of the synthesized coating is $4.1 \pm 0.5 \mu\text{m}^2$.

Video:

Video S1. The deposited oil droplet upon the surface with stalagmite-like tungsten oxide protrusions showed extremely low sliding angle underwater.