

## **Supporting Information**

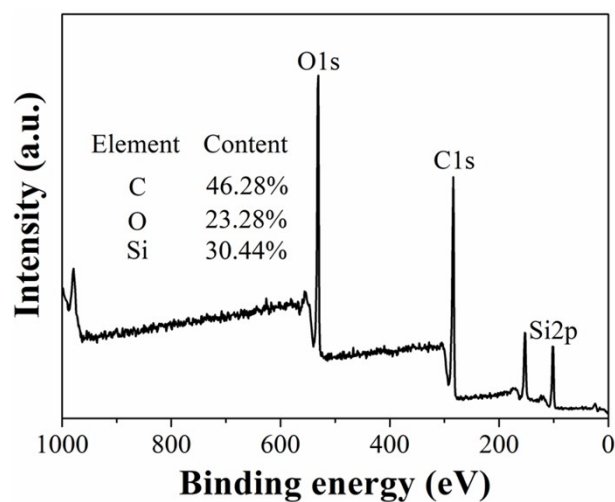
### **Polydimethylsiloxane-based superhydrophobic membranes: fabrication, durability, repairability, and application**

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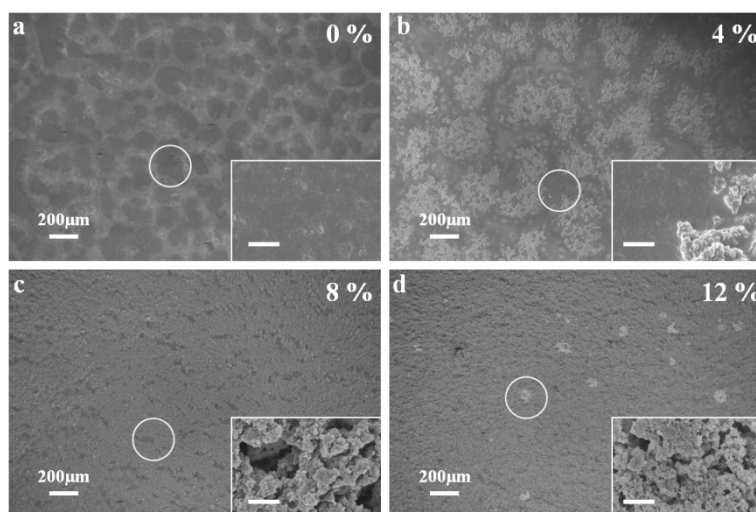
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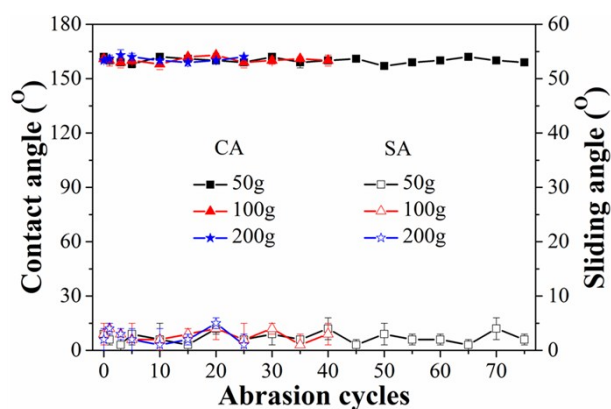
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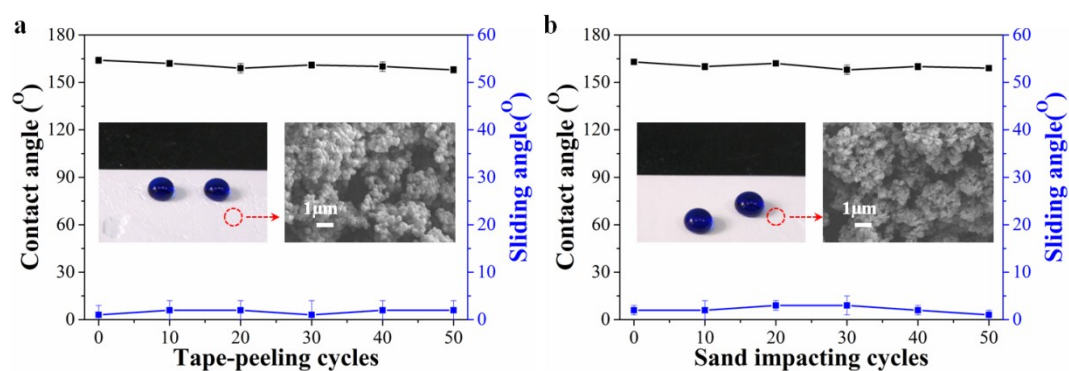
**Fig. S1.** XPS spectrum of the superhydrophobic membrane.



**Fig. S2.** SEM images of the fabricated membranes with different mass fractions of silica: (a) 0%, (b) 4%, (c) 8% and (d) 12%. Insets were high-magnification SEM images and the scale bars were 2 $\mu$ m.



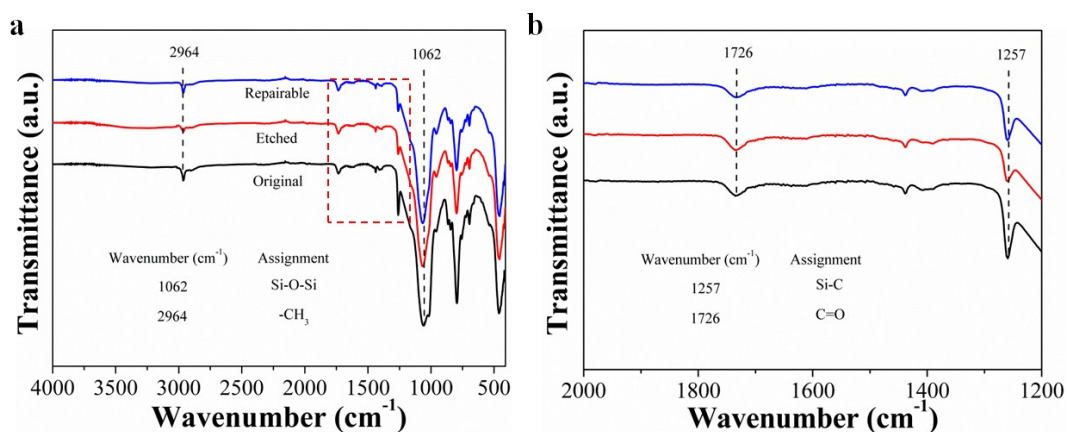
**Fig. S3.** CAs and SAs of the superhydrophobic membranes with different abrasion cycles (Black: 50 g; Red: 100 g; Blue: 200 g).



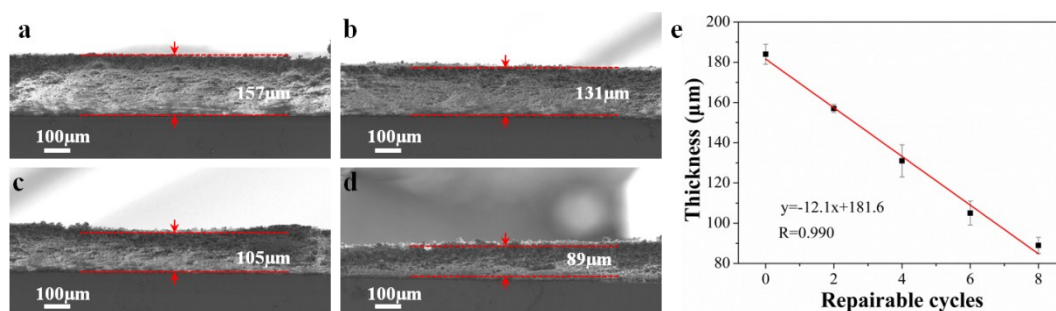
**Fig. S4.** CAs and SAs of the superhydrophobic membrane with (a) tape-peeling cycles and (b) sand impacting cycles. Insets were optical images and SEM images after tests.

**Table S1.** Elemental contents of the original, etched and repairable superhydrophobic membranes

	C/%	O/%	Si/%	C/O
Original	46.28	23.28	30.44	1.99
Etched	45.98	28.85	25.17	1.59
Repairable	46.34	24.16	29.50	1.92



**Fig. S5.** ATR-FTIR spectra of the original, etched and repairable superhydrophobic membranes.



**Fig. S6.** Cross-sectional SEM images of the superhydrophobic membrane with different repairable cycles: (a) 2 cycles, (b) 4 cycles, (c) 6 cycles and (d) 8 cycles. (e) Thickness of the superhydrophobic membrane with repairable cycles.

**Video S1.** Water flow bouncing on the superhydrophobic membrane.

**Video S2.** Underwater pattern display of the superhydrophobic membranes.