

Supporting Information

Fabrication of Mechanically Durable and Stretchable

Superhydrophobic PDMS/SiO₂ Composite Film

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Figure S1

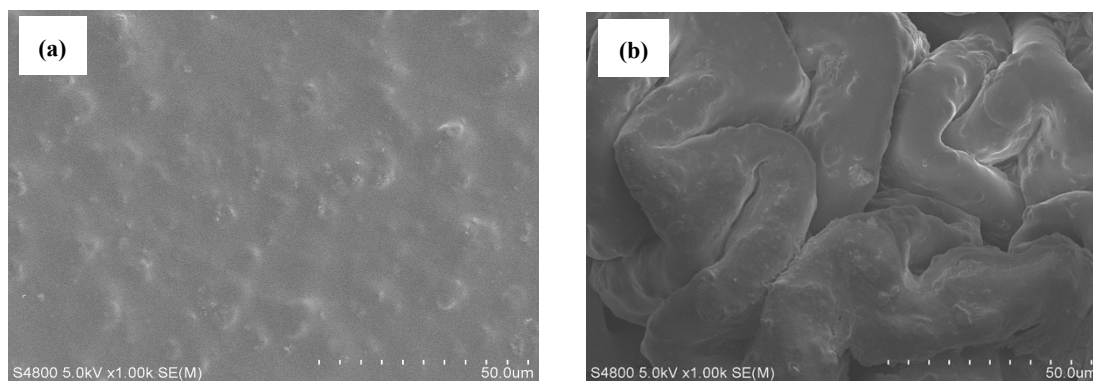


Figure S1 SEM images of shrink film before (a) and after (b) heating.

Figure S2

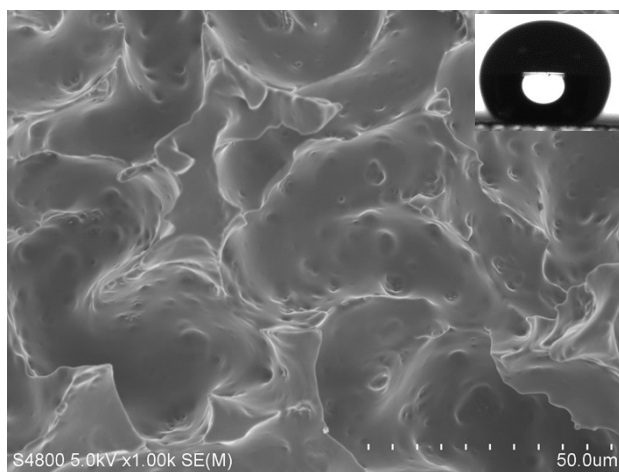


Figure S2 SEM images of superhydrophobic PDMS without spraying nanoparticles.

Table S1

Table S1 Comparison of the anti-abrasion ability of PDMS/SiO₂ composite film with previously reported works.

Material	Applied load	Distance	Reference
PFOTS modified TiO ₂ coating	0.2 N	240 cm	[1]
SiO ₂ +adhesive	50.0 g	1000 cm	[2]
FAS modified Na ₂ MoO ₄ and NaCl coating	700 Pa	100 cm	[3]
PDMS/TA-Al ³⁺ /PI nanofibrous membrane	100 g	150 cm	[4]
BC ₆ PSQ/PDMS coating	100 g	20 cycles	[5]
BES-25	100 g	290 cm	[6]
PDMS/SiO ₂ composite film	100 g	600 cm	This work

Table S2

Table S2 Comparison of acidic/alkaline resistance of superhydrophobic surfaces reported in literature.

Material	Condition	Time	Reference
SBS/SiNP/FDTS	pH=1/12	24 h	[10]
PDMS/TA-M ^{m+} /PI Membrane	pH=1-14	24 h	[4]
NCs Bulk	pH=1/13	12 h	[7]
APTES-SiO ₂ Coating	pH=2-14	40 h	[11]
PDMS/SiO ₂ film	pH=1-13	60 h	This work

Table S3

Table S3 Comparison of solvent resistance of superhydrophobic surfaces reported in literatures.

Material	Condition	Time	Reference
PDMS/TA-Mn+/PI Membrane	Hexane, acetone, toluene	24 h	[4]
APTES-SiO ₂ Coating	acetone, hexane, acetic acid	40 h	[11]
BC ₆ PSQ/PDMS Coating	ethanol, acetone, toluene	30 min	[5]
PDMS/SiO ₂ film	Hexane, acetone, toluene, DMF	60 h	This work

Table S4

Table S4 Comparison of UV-irradiation time of superhydrophobic surfaces reported in literatures.

Material	Parameters of UV lamp	Time	Reference
PDMS/TA-M ⁿ⁺ /PI Membrane	wave-length =254 nm 2 mW cm ⁻¹	20 h	[4]
NCs Bulk	—	12 h	[7]
SMP Micropillar Array	wave-length =365 nm	120 h	[8]
FA-PFDS Coating	40 W, 220 V	70 h	[9]
PDMS/SiO ₂ film	30 W, 220 V	150 h	This work

Videos

Video S1 The procedure of friction by hand.

Video S2 The water droplet bounces on the composite superhydrophobic film after friction by hands.

Video S3 The composite superhydrophobic film could back to normalcy without any damage after stretching with strain of 50%.

Video S4 Water droplet spreading and recoiling on composite superhydrophobic surface.

Video S5 Water droplet spreading and recoiling on 50% stretched surface.

Video S6 Water droplet with higher distance spreading and recoiling on 50% stretched surface.

Reference

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