

Fabrication of a superhydrophobic mesh based on PDMS /SiO₂ nanoparticles/PVDF microparticles/KH-550 by one-step dip-coating method

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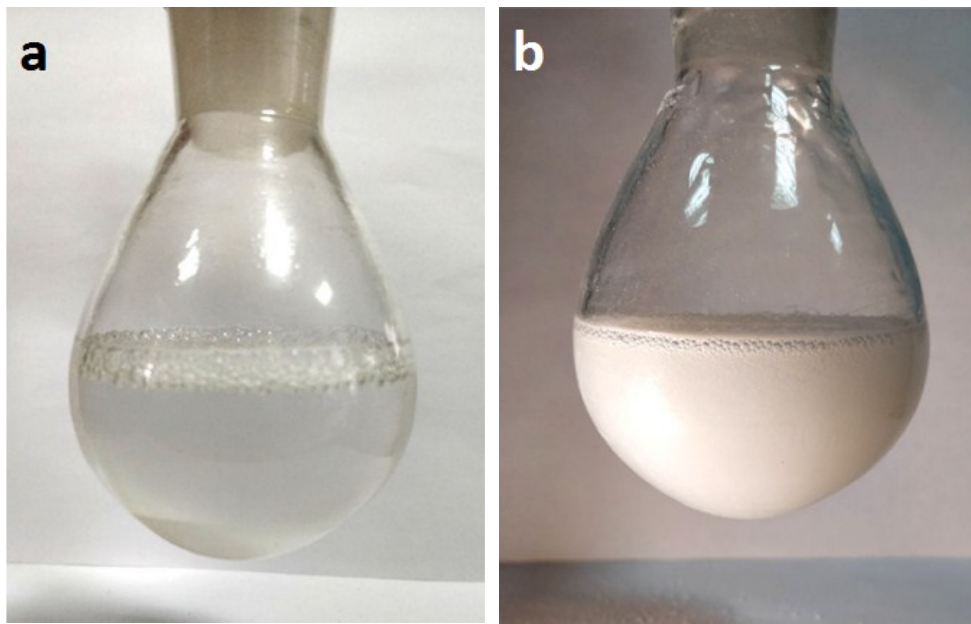


Fig. S1 (a) 2.5 g PDMS, 1.73 g PVDF and 0.433 g KH-550 were added to 50 ml of toluene, stir for 5 hours and stand for 10 minutes. The solution is clearly delaminated and PVDF sinks to the bottom (b) 2.5g PDMS, 3.125g SiO₂, 1.73g PVDF and 0.433g KH-550 were added to 50ml of toluene, stir for 5 hours and stand for 10 minutes. A paint-like suspension is formed.

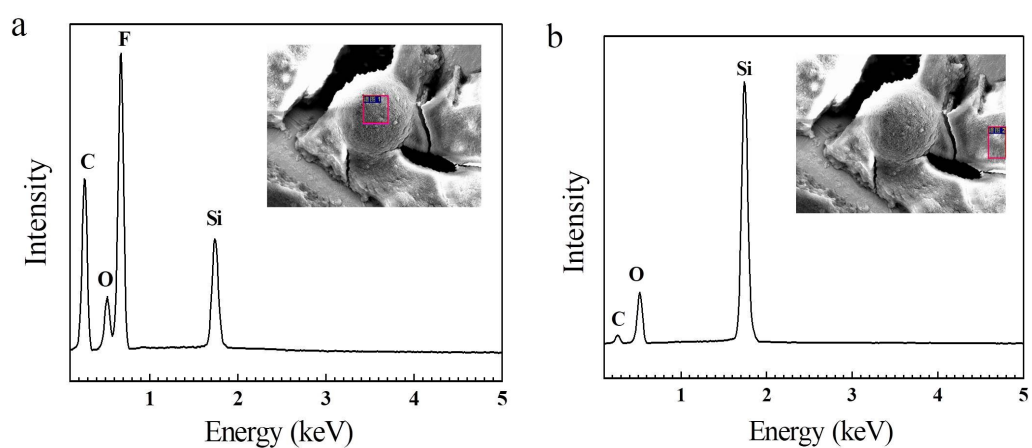


Fig. S2 EDS spectra of the PDMS/SiO₂/PVDF/KH-550 coating in different areas. (a) on the PVDF micro-particles, (b) without PVDF micro-particles.

Table S1. The elemental fractions in different areas of the PDMS/SiO₂/PVDF/KH-550 coating.

Region	Element mass fraction /%					
	C	N	O	F	Si	Cu
on PVDF micro-particles	44.55	0.00	8.91	43.49	3.04	0.00
without PVDF micro-particles	25.78	0.00	42.46	0.00	31.75	0.00

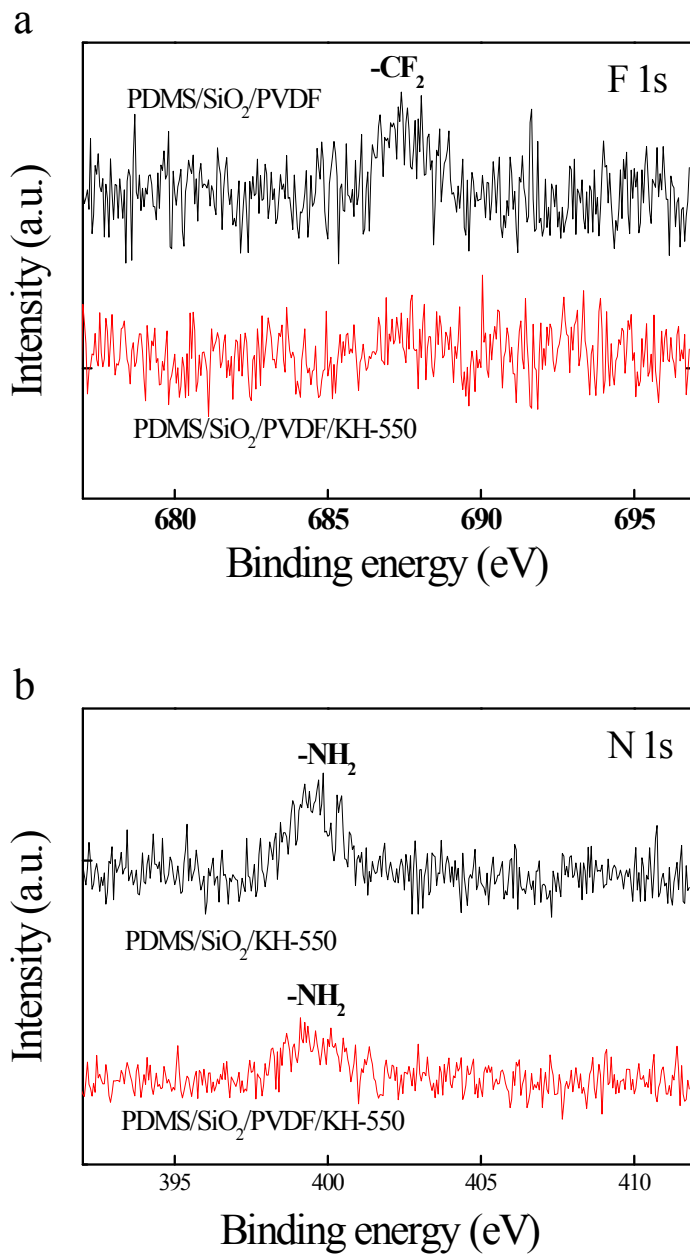


Fig. S3 (a) F 1s spectra of the PDMS/SiO₂/PVDF and PDMS/SiO₂/PVDF/KH-550 coatings. (b) N 1s spectra of the PDMS/SiO₂/KH-550 and PDMS/SiO₂/PVDF/KH-550 coatings.

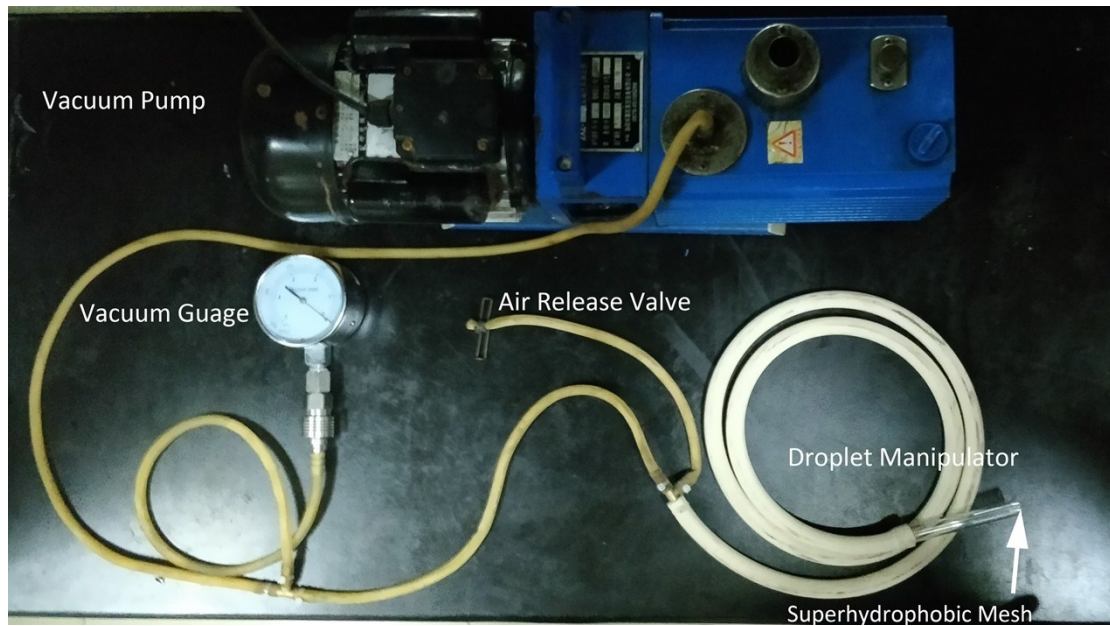


Fig. S4 The droplet manipulation device composed of a pump (providing the negative air pressure), a release valve (adjusting the pressure), a vacuum gauge (measuring the pressure), and a piece of superhydrophobic mesh (capturing the droplets).

Movie S1 A jet of water bounces off the coated mesh.

Movie S2 A water droplet (dyed by dark-blue ink) was put onto the coated mesh for 10 min, and then removed.

Movie S3 The mesh was inserted into dark-blue ink dyed water and lifted up.

Movie S4 The model contaminant (green chalk dust) was easily cleared away from the mesh.