Electronic Supplementary Material (ESI) for RSC Advances.

Fabrication of superhydrophobic thin films on various substrates using SiO_2 nanoparticles coated with polydimethylsiloxane: towards development of shielding layers for gas sensors

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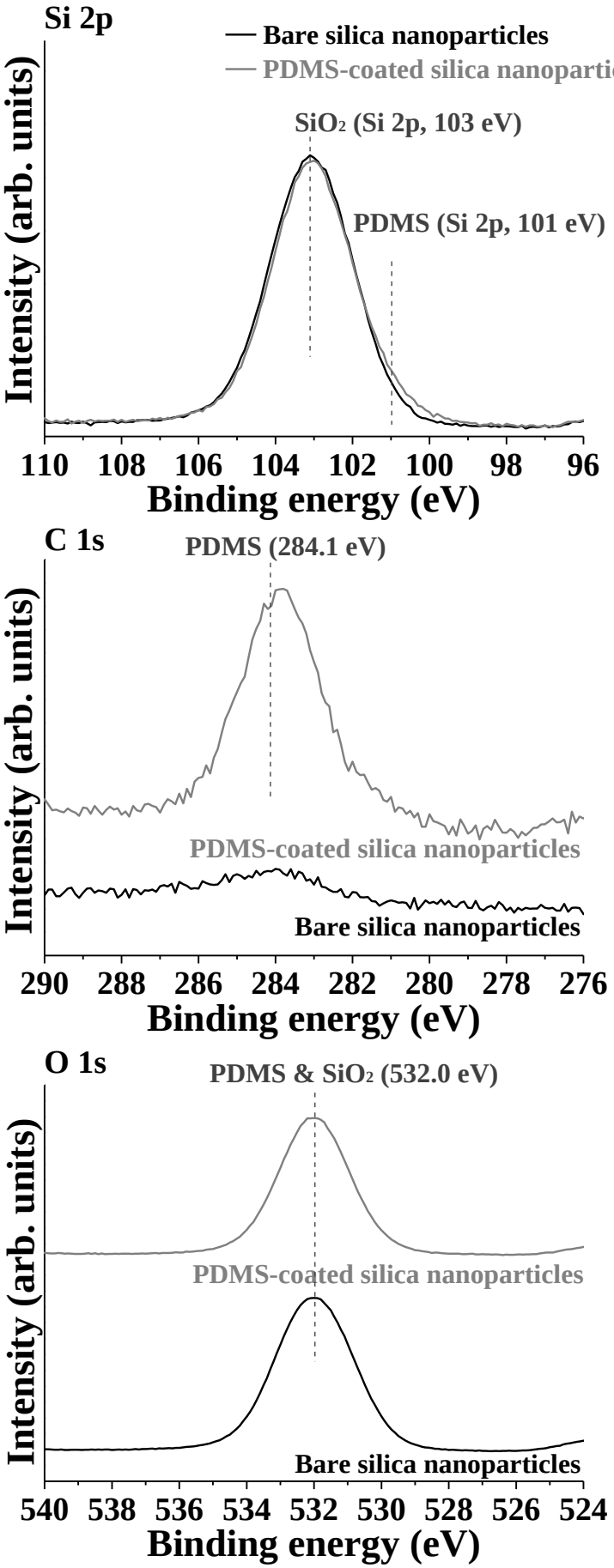
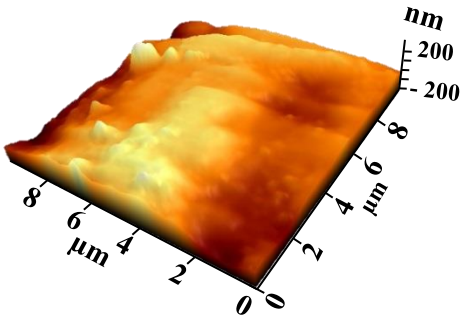
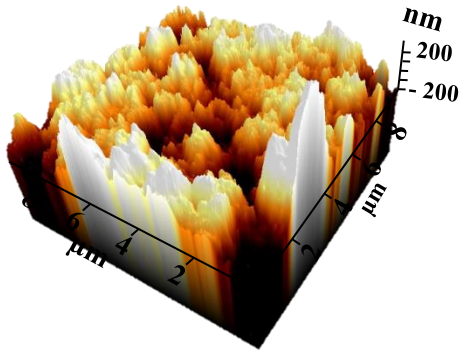


Fig. S1 XPS spectra of bare and PDMS-coated silica are displayed. Si 2p, C 1s and O 1s spectra of both samples are compared.

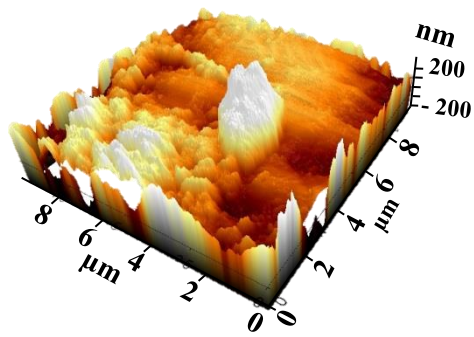
(a)



Bare mesh-1

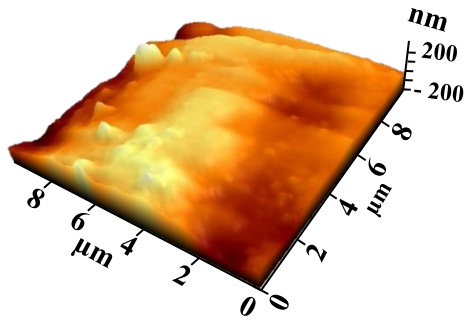


Dip-coated mesh-1A

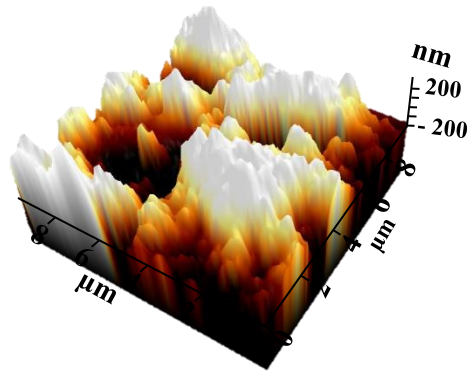


After sand abrasion test with the coated mesh-1A

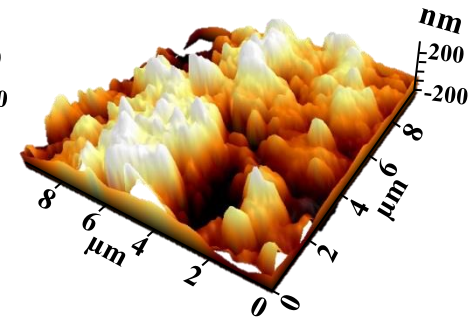
(b)



Bare mesh-1



Dip-coated mesh-1B



After sand abrasion test with the coated mesh-1B

Fig. S2 AFM images of various mesh substrates before and after dip coating and after sand abrasion test are compared. a) Dip-coating was done using solution A. b) Solution B was used

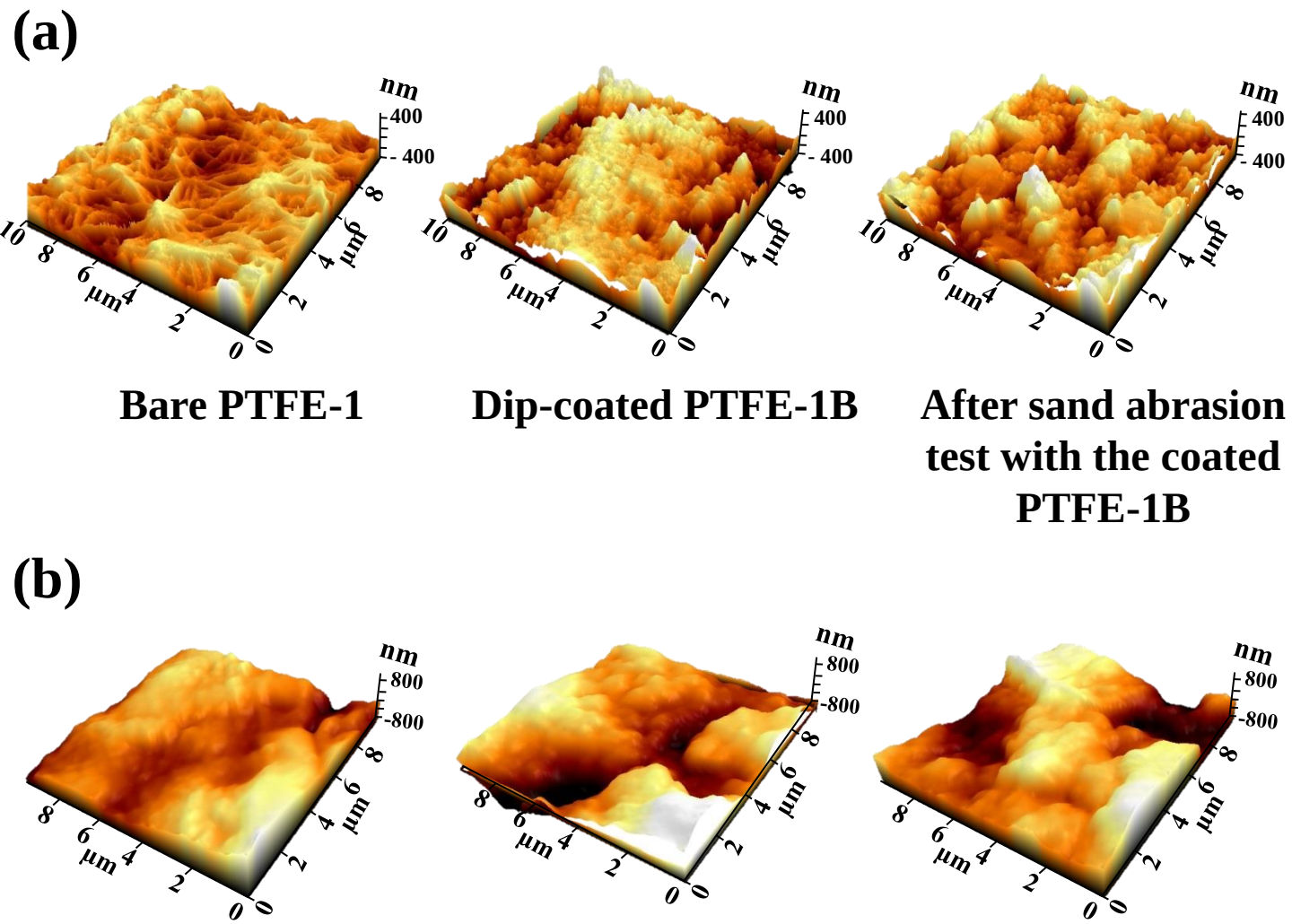


Fig. S3 AFM images of various substrates before, and after dip coating with solution B and after sand abrasion test are compared. a) PTFE-1 was used as substrate. b) Paper was used as substrate.

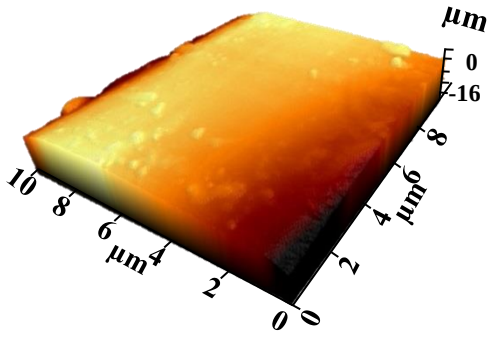
Sample	Bare (nm)	After coating with solution B (nm)	After sand abrasion test (nm)
Mesh-1A	119.2	231.6	129.0
Mesh-1B	119.2	269.6	186.8
PTFE-1B	121.5	212.2	185.8
Paper-B	275	411.3	384

Fig. S4 Root mean square (rms) roughness values of the surfaces in Figs. S3 and S4 are summarized.

(a)

Sample	θ_{sta}	θ_{ad}	θ_{re}	$\theta_{ad} - \theta_{re}$
Umbrella	137.4°	140.9°	98.6°	42.3°

(b)



rms roughness
178 nm

Fig. S5 a) Water contact angles of commercial umbrella used in the present work. b) AFM image of the umbrella surface.