

Supporting Information

Stable superhydrophobic coatings from the thiol-ligand nanocrystals and their application in oil/water separation

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Table S1. pK_{sp} value of different sulfides from Lange's Handbook of Chemistry.

	FeS	CoS	NiS	CuS	Cu ₂ S	Ag ₂ S
pK_{sp}	17.2	24.7	25.7	35.2	47.6	49.2

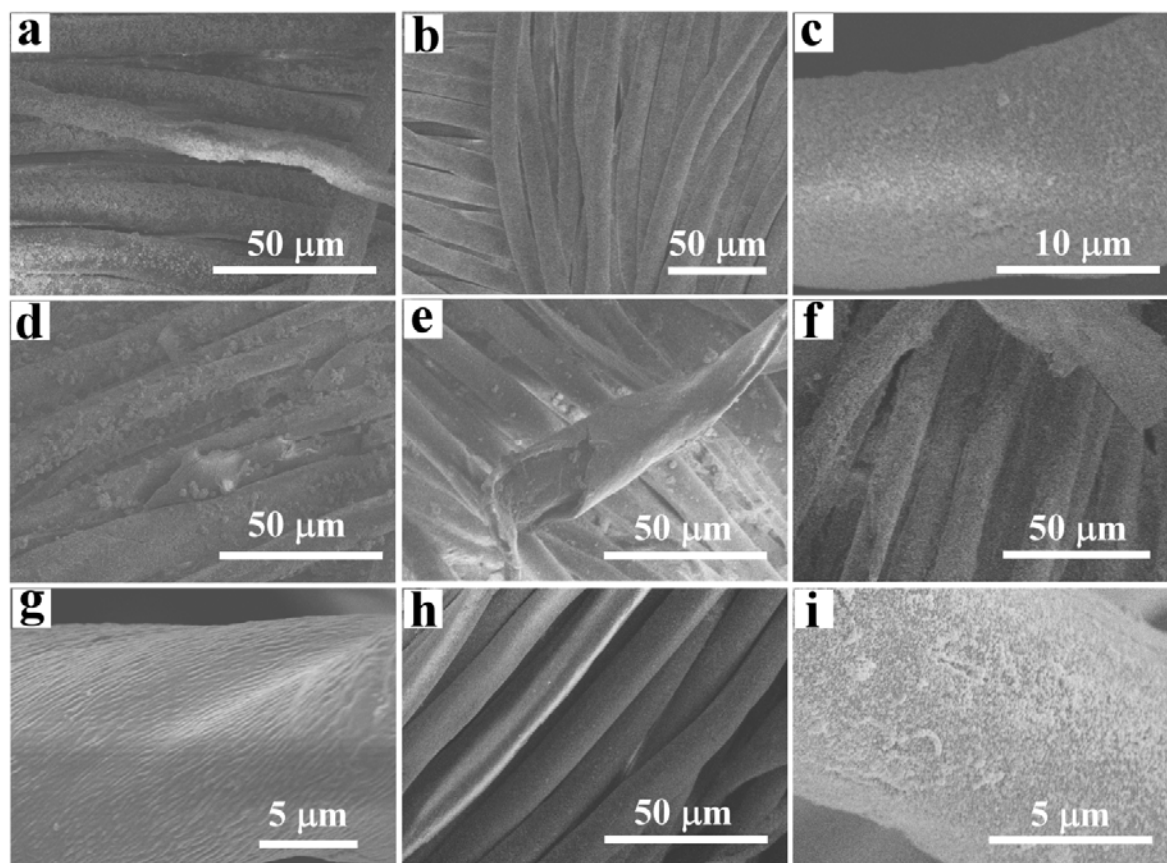


Figure S1. SEM images of the textiles coated with different nanocrystals, (a) FeO, (b, c) Fe₂O₃, (d) CoO, (e) NiO, (f) CuO from clean aqueous suspension, (g) CuO directly obtained from ethanol suspension, (h, i) Ag.

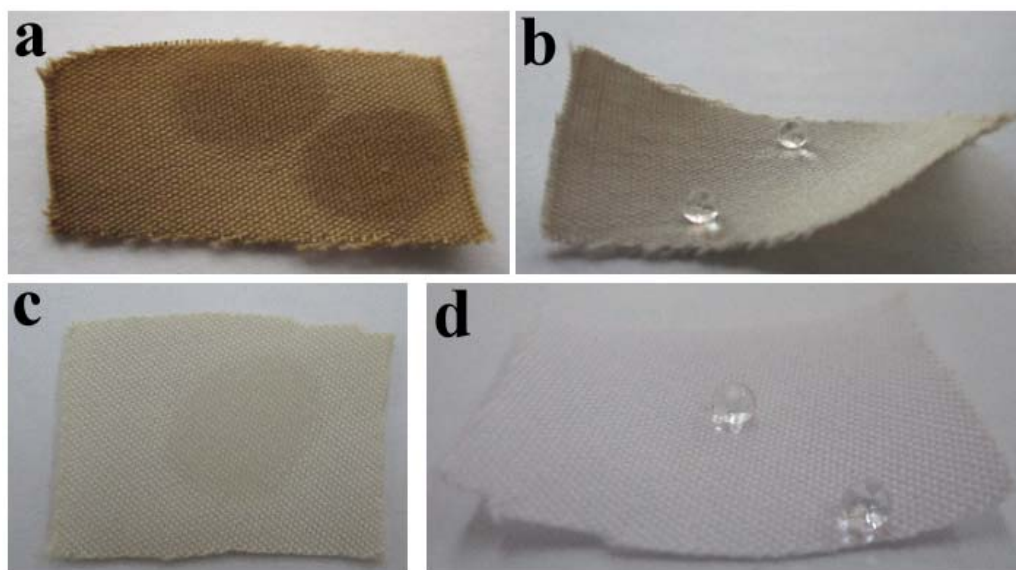


Figure S2. Water droplet standing on the textiles coated with CuO (a, c) before and (b, d) after octadecyl thiol modification. (a, b) nanocoatings from clean CuO aqueous suspensions, (c, d) nanocoatings directly from CuO nanoparticles suspensions in ethanol.



Figure S3. Oil droplet such as hexadecane standing on the textiles coated with CuO after octadecyl thiol modification.



Figure S4. Water droplet standing on the textile coated with Fe_3O_4 .

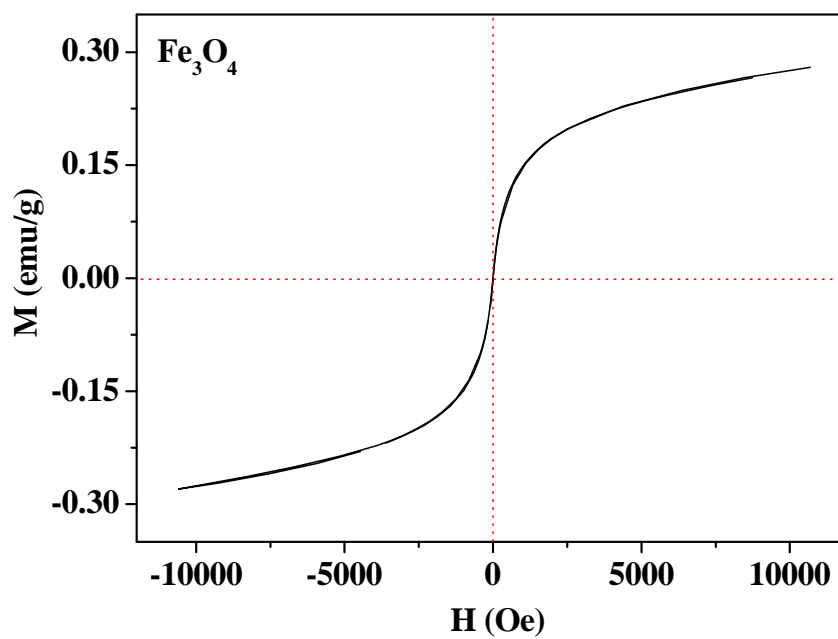


Figure S5. The magnetic hysteresis loop of as-prepared Fe_3O_4 .



Figure S6. A photo showing that the textile coated with Fe_3O_4 is magnetic when a magnet is close to it.

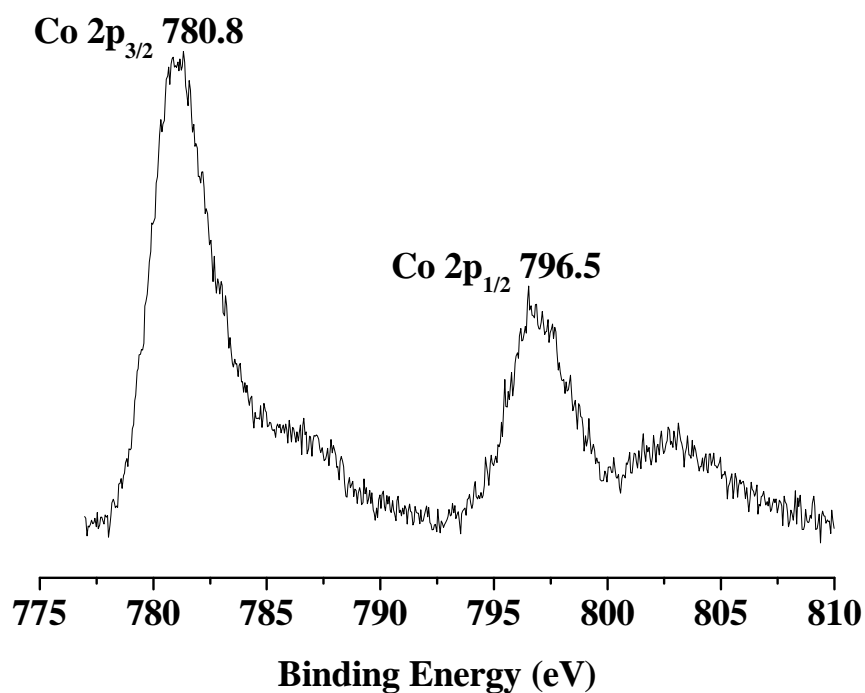


Figure S7. XPS spectrum of as-prepared textiles coated with CoO.

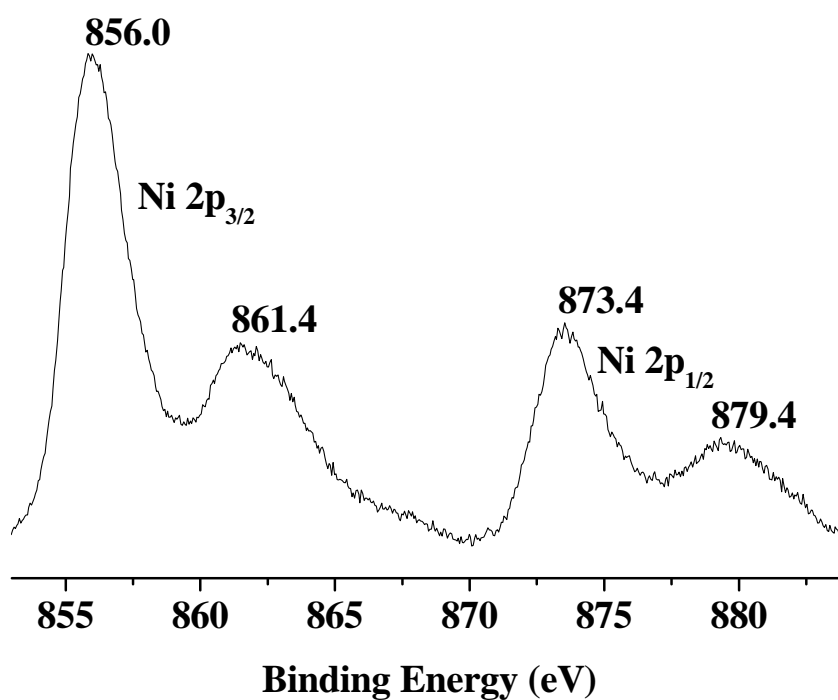


Figure S8 XPS spectrum of as-prepared textiles coated with NiO.

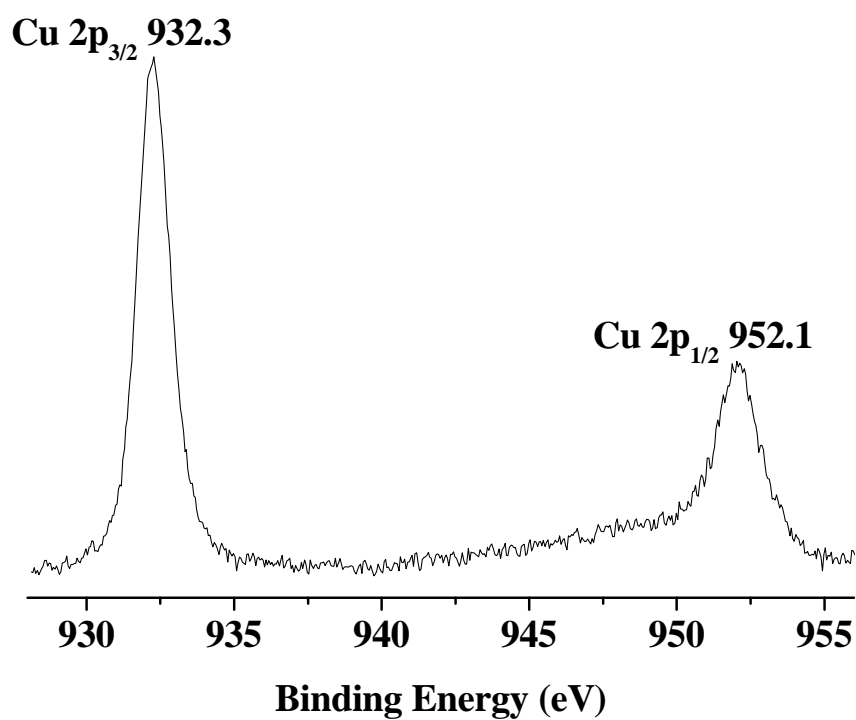


Figure S9. XPS spectrum of as-prepared textiles coated with CuO.

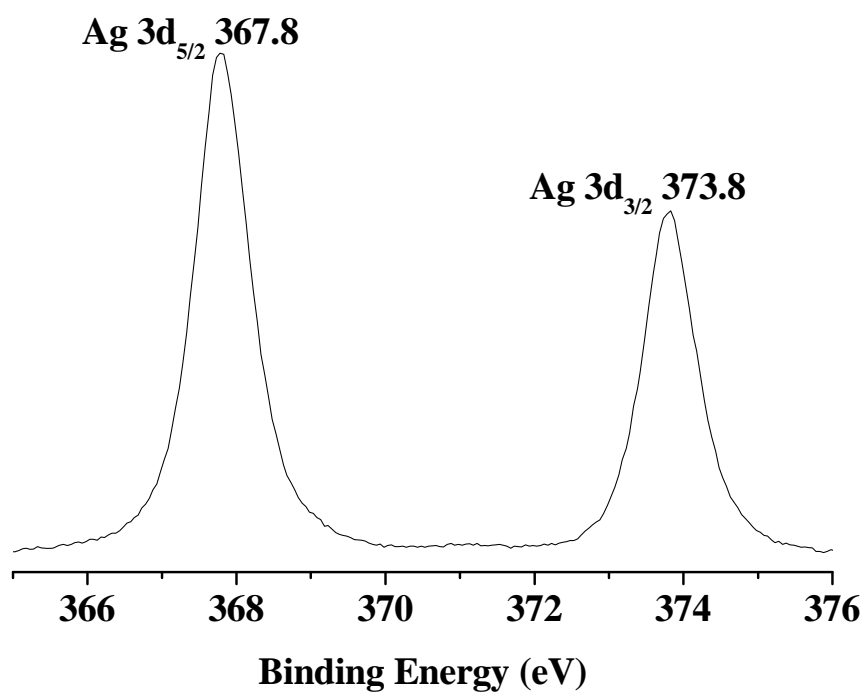


Figure S10. XPS spectrum of as-prepared textiles coated with Ag.

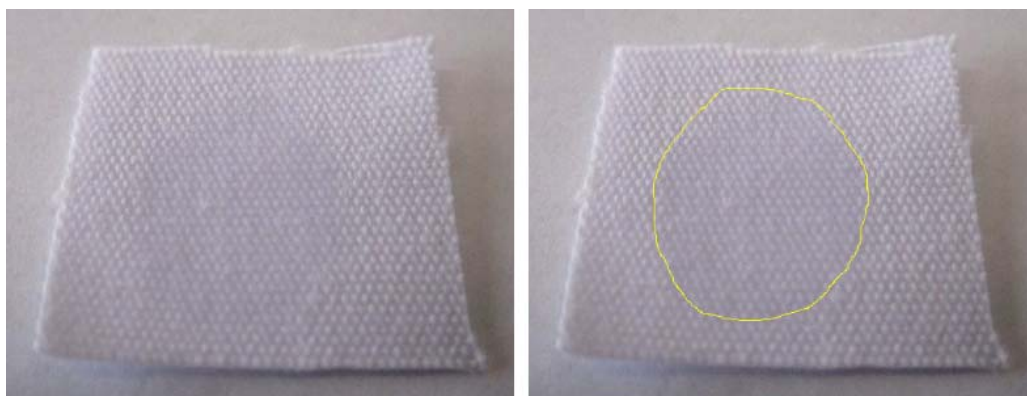


Figure S11. Water droplet standing on the textiles coated with TiO_2 .

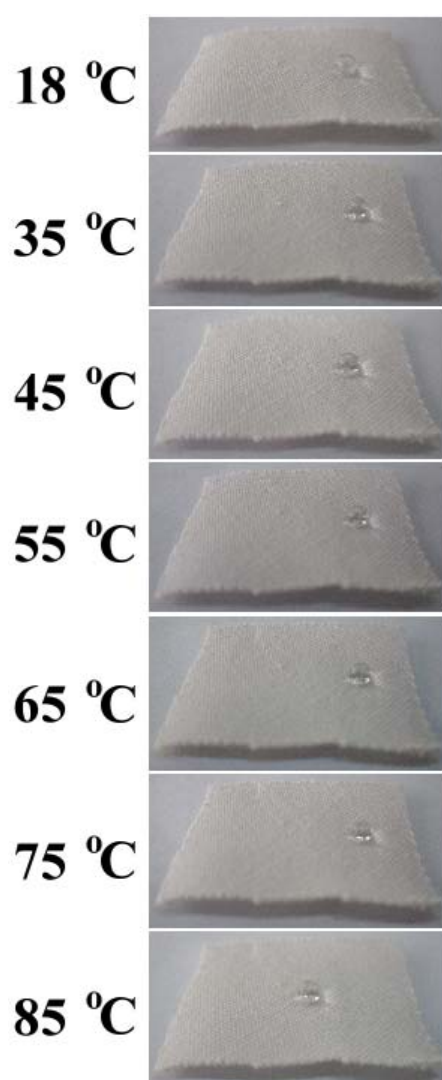


Figure S12. Water droplet at different temperatures standing on the textiles.

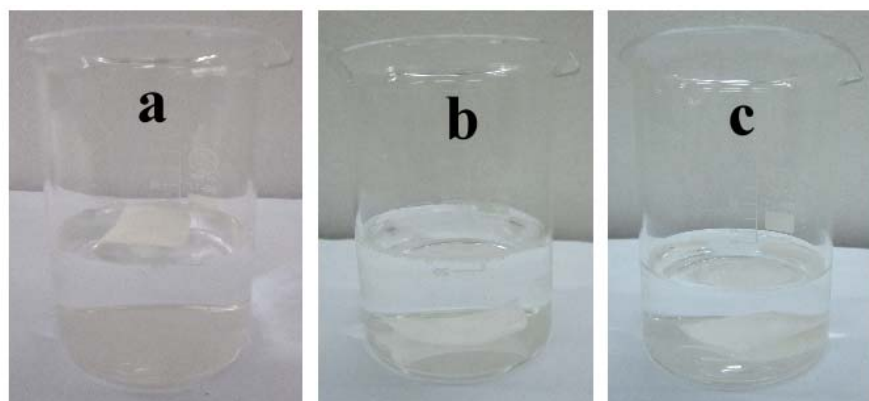


Figure S13. (a) As-prepared superhydrophobic textiles on water surface. (b) Superhydrophobic textiles in 0.4% SDBS aqueous solution. (c) Superhydrophobic textiles in hexane.

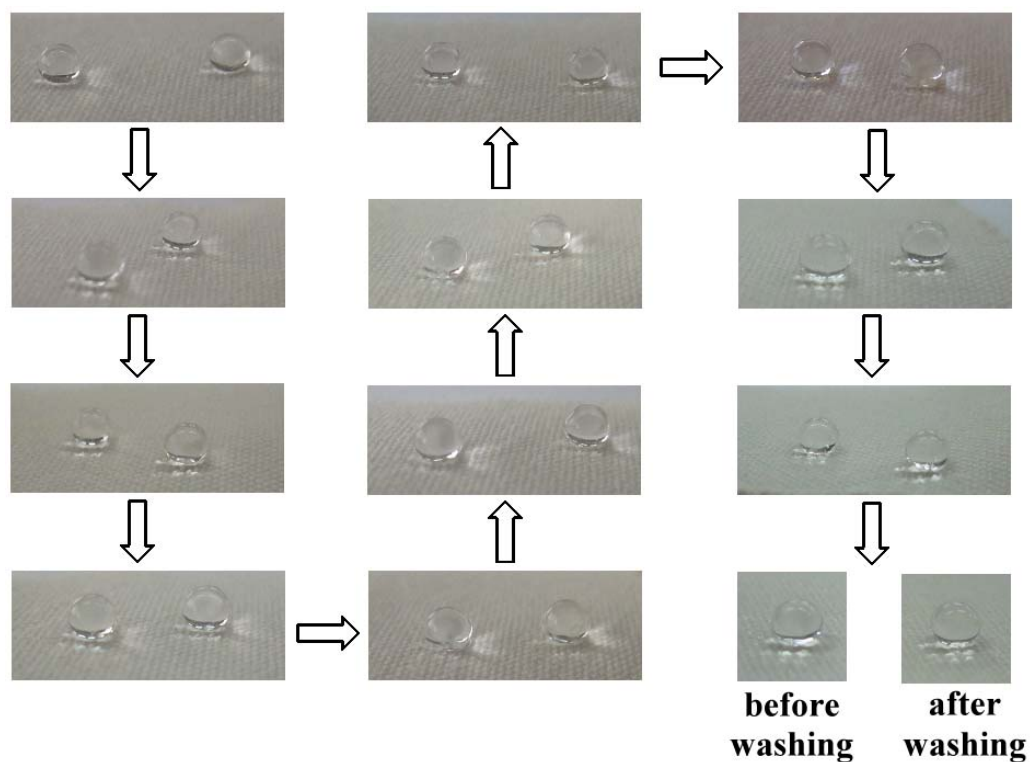


Figure S14. The effect of 0.04% SDBS aqueous washing on the wettability of as-prepared textiles.

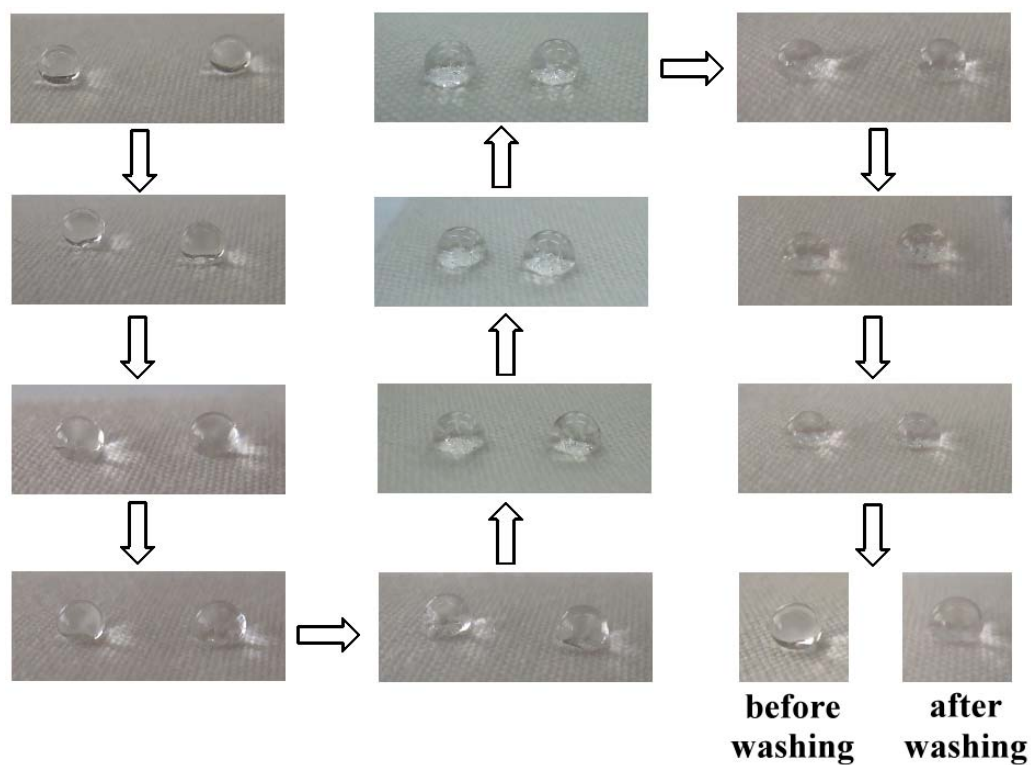


Figure S15. The effect of 0.4% SDBS aqueous washing on the wettability of as-prepared textiles.

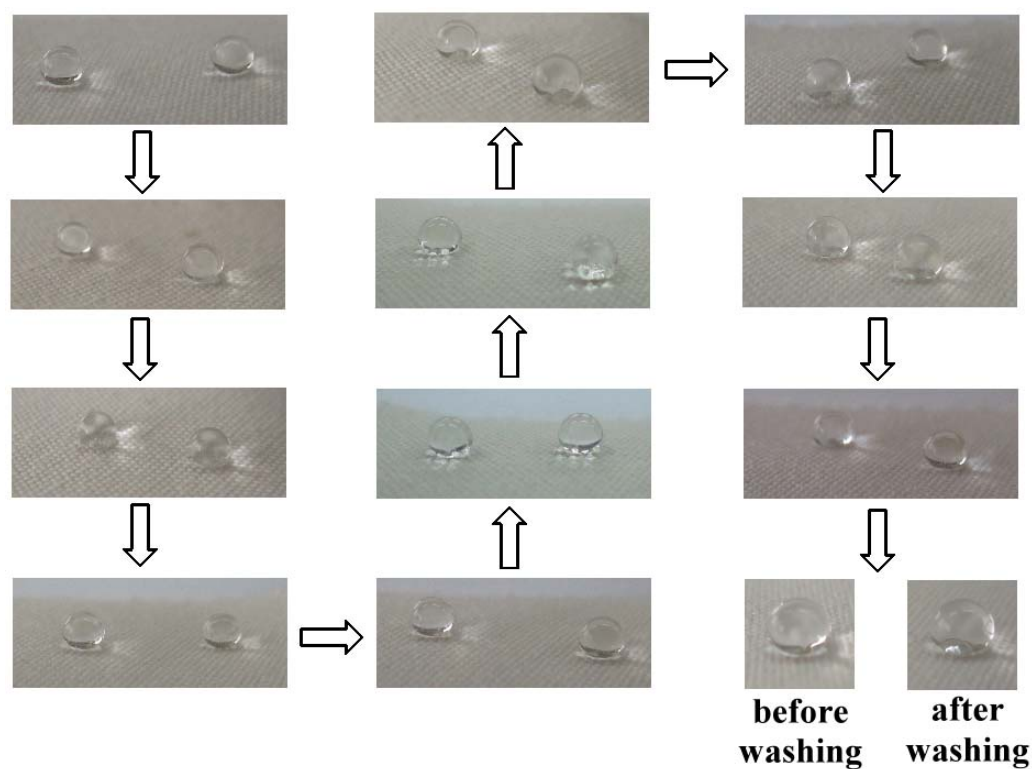


Figure S16. The effect of 0.4% CTAB aqueous washing on the wettability of as-prepared textiles.

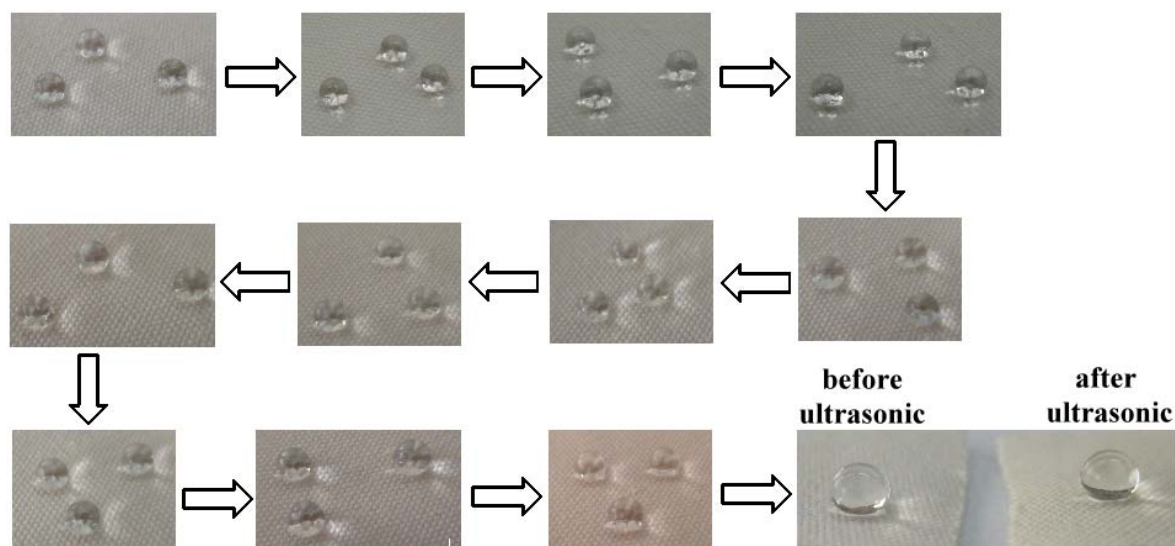


Figure S17. The effect of ultrasonic treatment in nonpolar solvents on the wettability of as-prepared textiles.

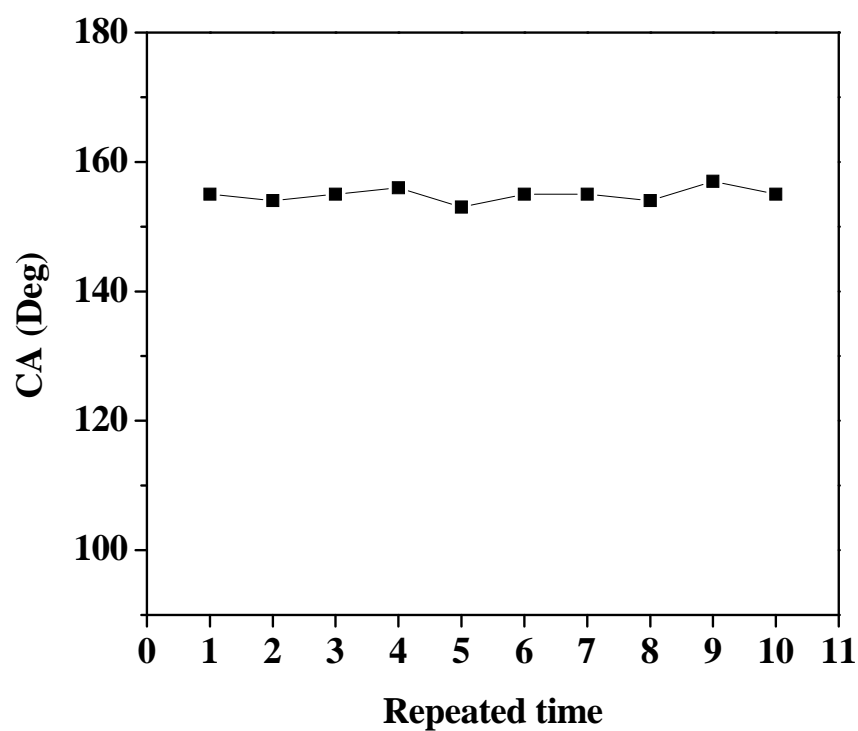


Figure S18. The contact angle of water on the superhydrophobic textiles after each oil-water separation.

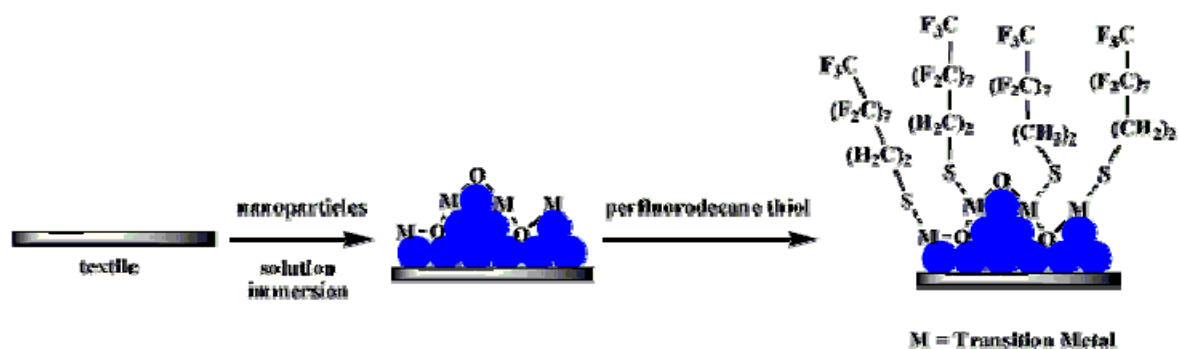


Figure S19. Schematic illustration of surface perfluorination on the textiles.

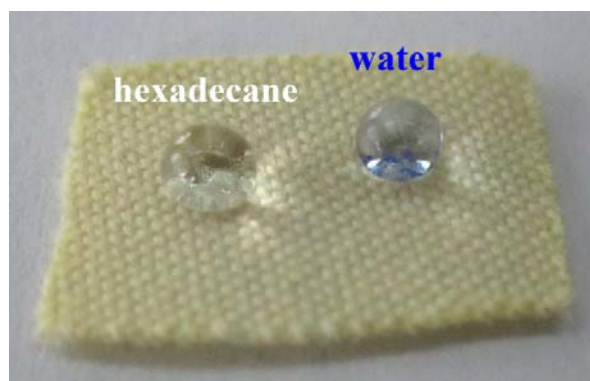


Figure S20. Water (blue colored by methylene blue) and oil droplet standing on the textiles after surface perfluorination.