Supporting Information

One-step preparation of hydrophobic surfaces containing hydrophilic groups for efficient water harvesting

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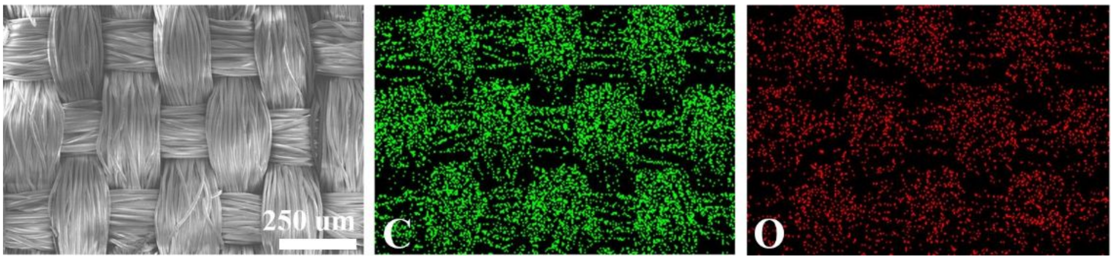

Figure S1. SEM image and corresponding elemental mapping of the raw fabric.

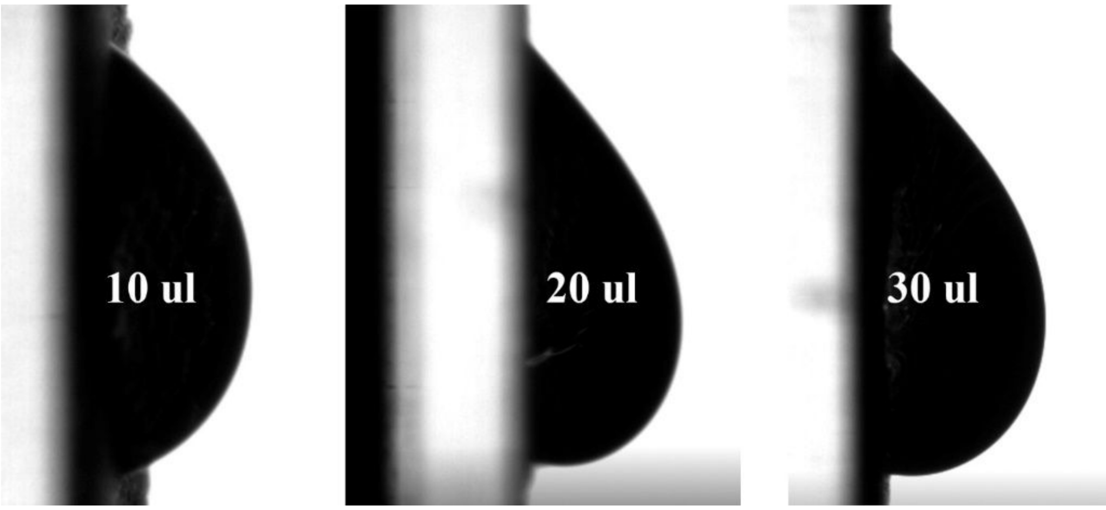

Figure S2. Water droplet pinned on the surface of Fabric-1.

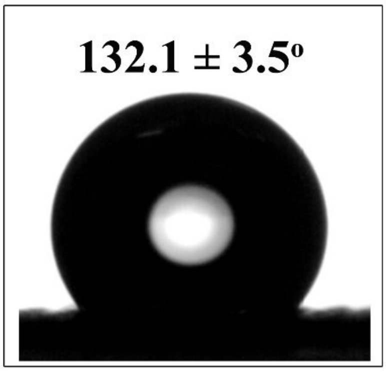

Figure S3. Water contact angle of functional fabric surface (H_2N-PDMS-NH_2 , TEOS and TGOS were 2×10^{-2} mol, 5×10^{-4} mol and 5×10^{-4} mol，respectively) .

Table S1. Comparison of the mechanical properties of the original fabric, the fabric treated in acid environment and the prepared functional Fabric-2.

Sample	Maximum tensile strain (%)	Maximum tensile stress(MPa)
Fabric without treatment	50.19	91.86
Fabric-2	75.04	83.52
Raw fabric treated in acid environment	63.59	91.57

Table S2. Comparison of water collection rate of the prepared functional fabrics with other previous researches

Water harvesting material	Water collection rate ($g\ cm^{-2}\ h^{-1}$)	Type of experiment	References
Incorporating a (super)hydrophobically modified metal-based gauze onto the surface of a hydrophilic polystyrene flat sheet	~0.159 $g\ cm^{-2}\ h^{-1}$	Fog harvesting with fog flow rate of ~12 cm/s at 7 cm distance, the temperature and relative humidity are 22 °C and 90-95%, respectively.	1
CB modified hydrophilic needle and hydrophobic agent coated sheet	~1.066 $g\ cm^{-2}\ h^{-1}$	Fog harvesting with fog flow rate of ~70 cm/s at 5 cm distance and 85-90% RH	2
Cellulose-based superhydrophobic surface decorated with functional hydrophilic groups	~0.694 $g\ cm^{-2}\ h^{-1}$	Fog harvesting with fog flow rate of ~1.1 m/s at 8 cm distance, the temperature and relative humidity are 25 °C and 30%, respectively.	3
Star-shaped wettability patterns	~2.78 $g\ cm^{-2}\ h^{-1}$	Fog harvesting with fog flow rate of ~75 cm/s and relative humidity of more than 95%	4
CNFs/ZnO-tetrapod hybrid Janus membrane	~2.34 $g\ cm^{-2}\ h^{-1}$	NA	5
Polydimethylsiloxane and graphene coated hydrophobic and superhydrophobic Cu mesh	~5.4 $g\ cm^{-2}\ h^{-1}$	Fog harvesting with fog flow rate of ~45 cm/s	6
Copper oxide microtufts were fabricated onto the Ficus religiosa leaf skeletons via electroplating and chemical oxidation techniques	~0.45 $g\ cm^{-2}\ h^{-1}$	Fog harvesting with fog flow rate of 5-15 cm/s at 5cm distance, the temperature and relative humidity are 25 °C and 99%, respectively.	7
Hybrid hydrophilic−hydrophobic $CuO@TiO_2$-coated copper mesh	~0.571 $g\ cm^{-2}\ h^{-1}$	The flow rate and speed of the commercial humidifier are 0.07 g s^{-1} and about 50 cm s^{-1} at 5 cm distance, respectively, the	8

		temperature and relative humidity in the environment are 22 °C and 90%, respectively	
Janus fabrics with asymmetric wettability	~0.224 g cm^{-2} h^{-1}	Fog harvesting with fog flow rate of ~10 cm/s at 10 cm distance, the temperature and relative humidity are 20 °C and 90%, respectively.	9
Surface with a well-arranged hierarchical nanoneedle structures	~0.543 g cm^{-2} h^{-1}	Fog harvesting with fog flow rate of ~0.0867 cm^3/s at 10 cm distance with a 45° inclined angle.	10
Hydrophobic surfaces containing hydrophilic groups	~3.145 g cm^{-2} h^{-1}	A conventional ultrasonic humidifier (JSQ25) with the fog-making power approximately 0.25 L/h was used, the distance keeps at 5 cm, and the temperature and relative humidity are 10 °C and 90 -95 %, respectively.	This work

Supplementary movie captions

Movie S1: This movie shows the sliding behavior of water (10 ul) on the surface of Fabric-2.

Movie S2: This movie shows the sliding behavior of water (20 ul) on the surface of Fabric-2.

Movie S3: This movie shows the sliding behavior of water (30 ul) on the surface of Fabric-2.

Movie S4: This movie shows the sliding behavior of water (10 ul) on the surface of Fabric-3.

Movie S5: This movie shows the sliding behavior of water (20 ul) on the surface of Fabric-3.

Movie S6: This movie shows the sliding behavior of water (30 ul) on the surface of Fabric-3.

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