Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary

Biomimetic structure of carbon fiber cloth grafted with poly (N-isopropylacrylamide) for water collection and smart gate

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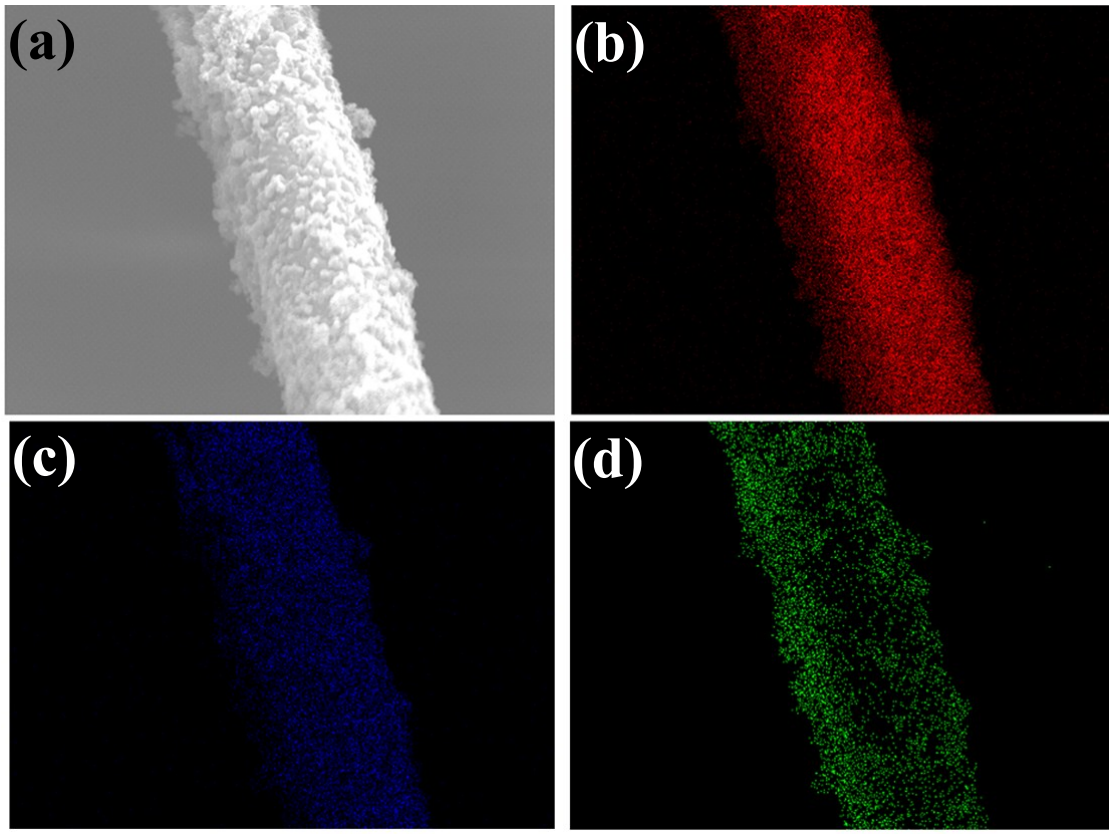

Fig.S1. (a) FE-SEM image of TiO_2@CFC morphology, (b-d) element mappings of TiO_2@CFC: (b) Carbon, (c) oxygen, and (d) titanium.

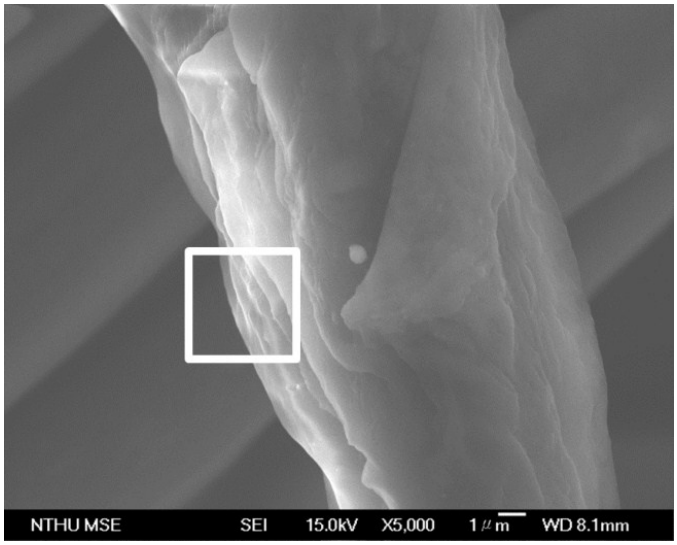

Fig.S2. FE-SEM image of the PNIPAM-PD/TiO_2@CFC with 48-h PNIPAM graft.

A high-magnification image of the marked area is shown in Fig.2f in the main text.

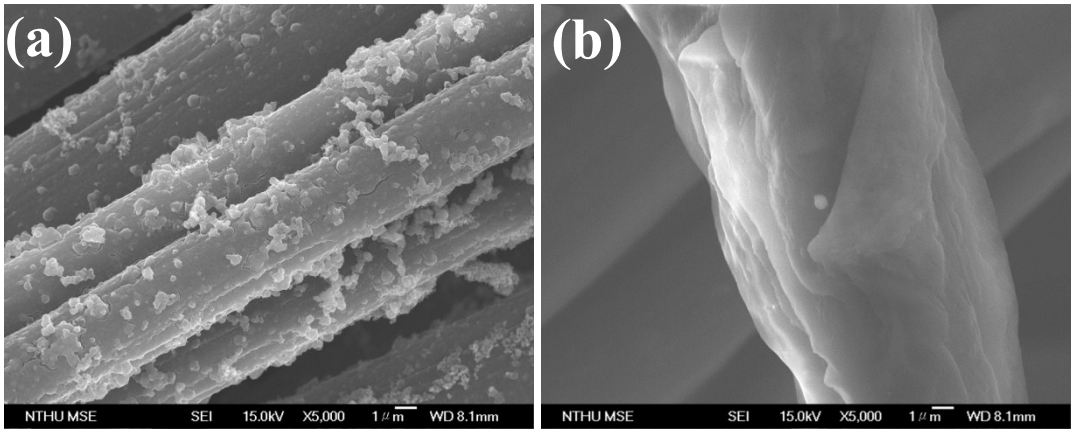

Fig.S3. FE-SEM images of the CFC with different surface modifications. (a) PD/TiO_2@CFC and (b) PNIPAM-PD/TiO_2@CFC. The thickness of the PNIPAM layer immobilized on the PD layer is nearly 4 μm (the high magnification was shown in fig. 2d and f in the original manuscript)

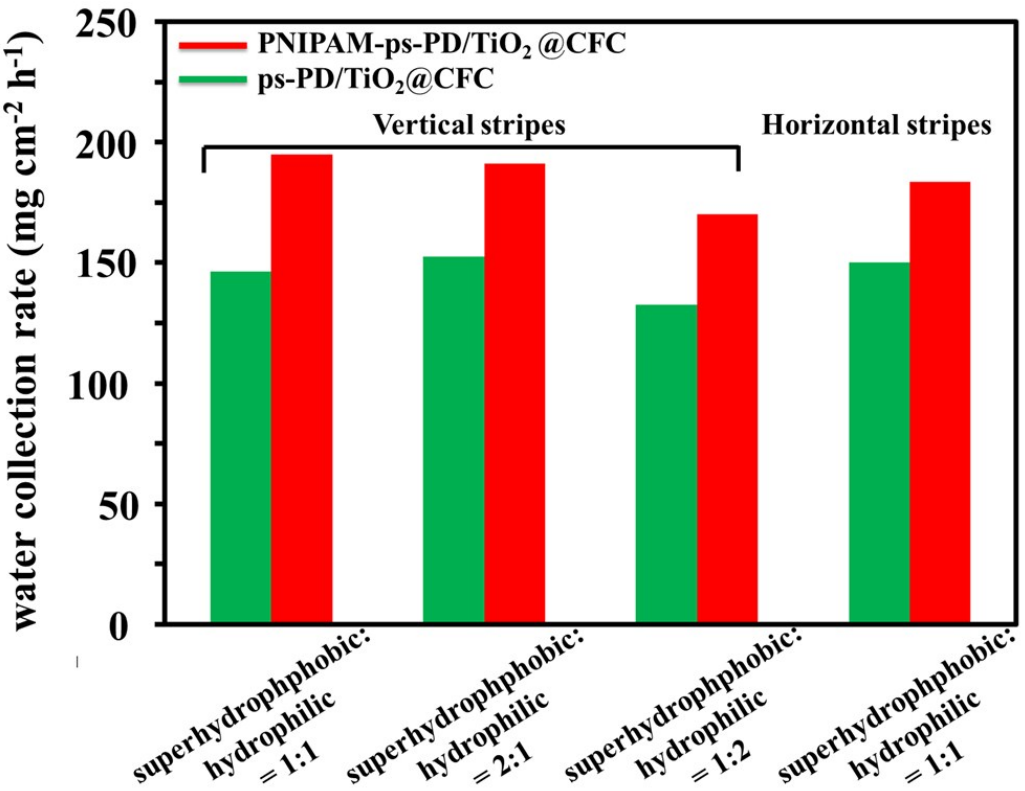

Fig. S4 Water collection rates of CFC with different patterns , including sole horizontal strip and sole vertical strip, as well as the width ratio between the superhydrophobic and hydrophilic strips.

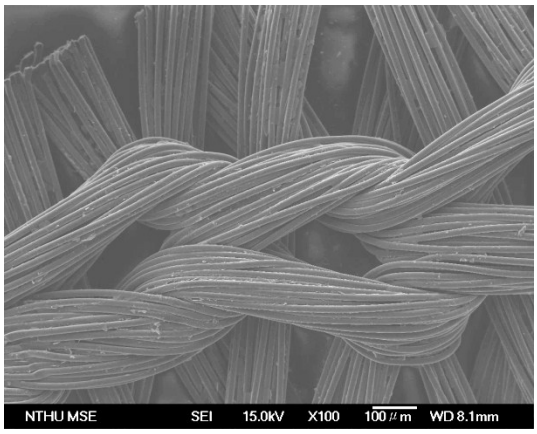

Fig. S5 FE-SEM image of the CFC used in this work. The image was demonstrate that the CFC substrate is composed of warp and weft.

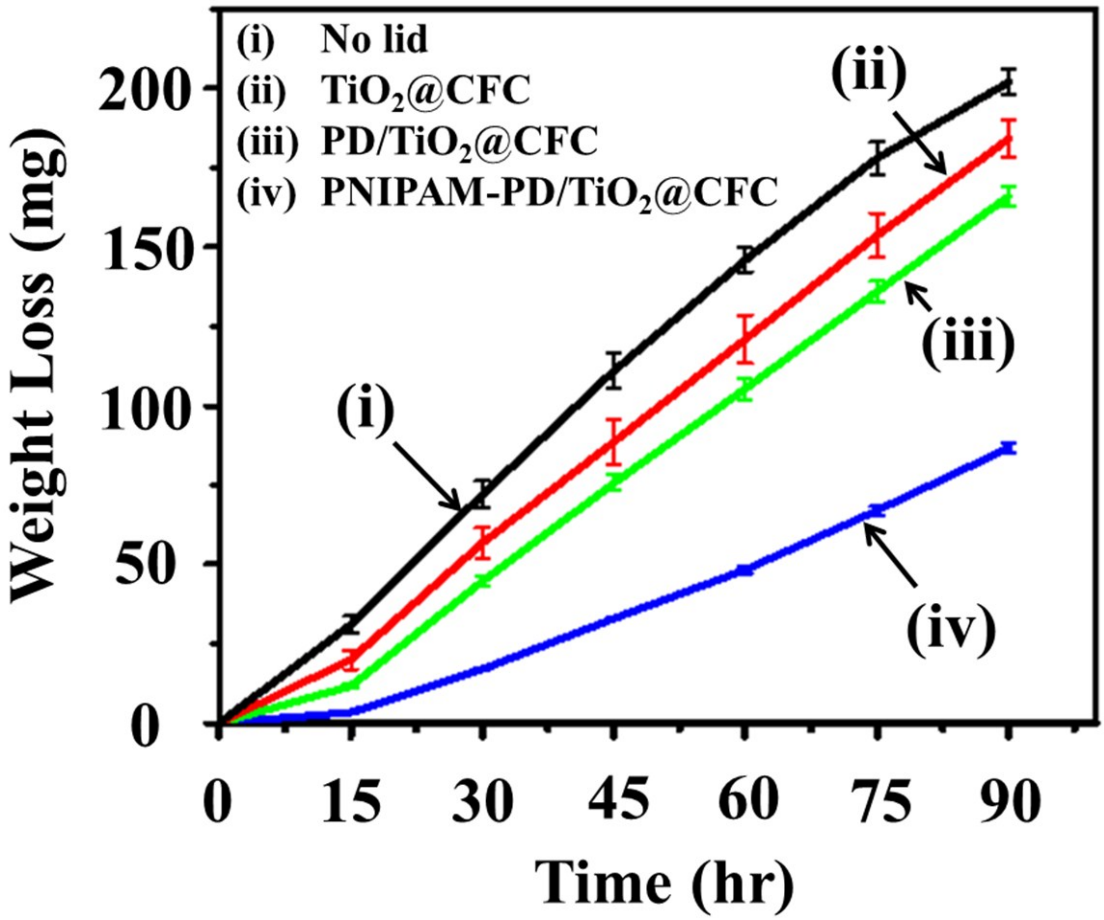

Fig. S6. Water evaporation evaluated by calculating the weight loss of the samples with different surface modification under the conditions of 24 °C and 70% relative humidity.

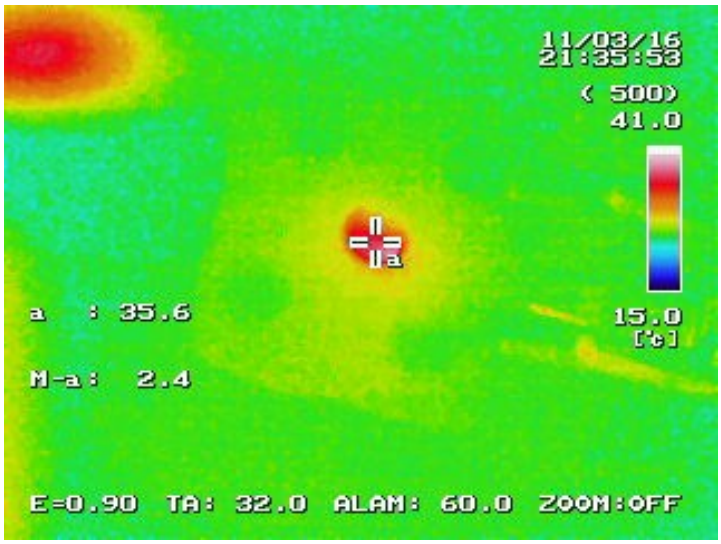

Fig. S7. A NIR snapshot of the temperature transition of PNIPAM-PD/TiO_2@CFC fixed in a five-hole smart valve apparatus under NIR laser irradiation.