

Supporting Information

Bio-inspired Humidity Responsive Switch for Directional Water Droplet Delivery†

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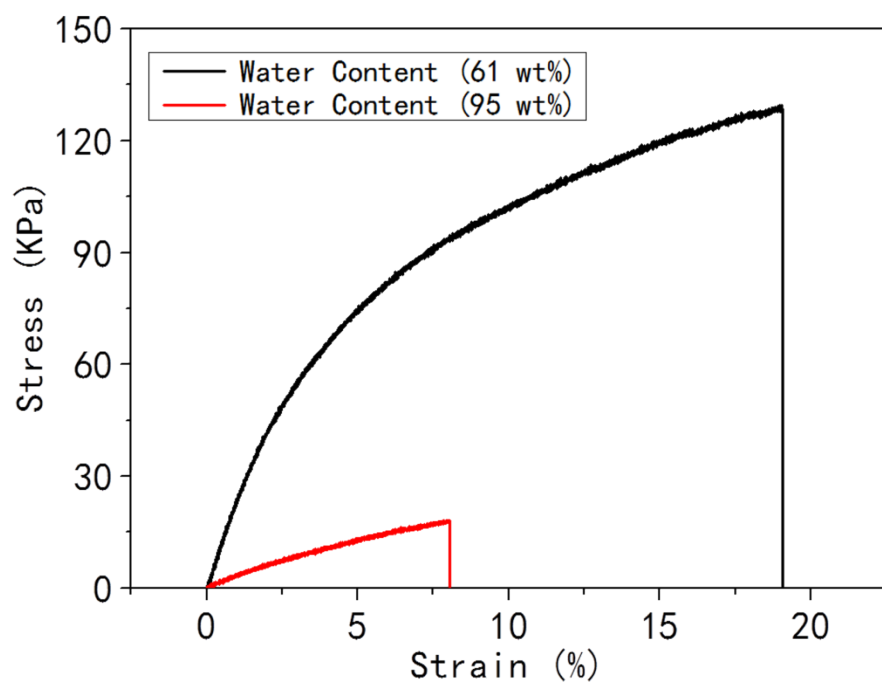


Fig. S1 Tensile stress-strain curves of the wet PAA hydrogel (red line) and the dry PAA hydrogel (black line). When the water content was 95 wt%, the stress and strain of the dry hydrogel was respectively 17 KPa, 8.1%; when the water content reduced to 61 wt%, the correspondent tensile stress of 128.1 KPa and strain of 19.1% were greatly improved.

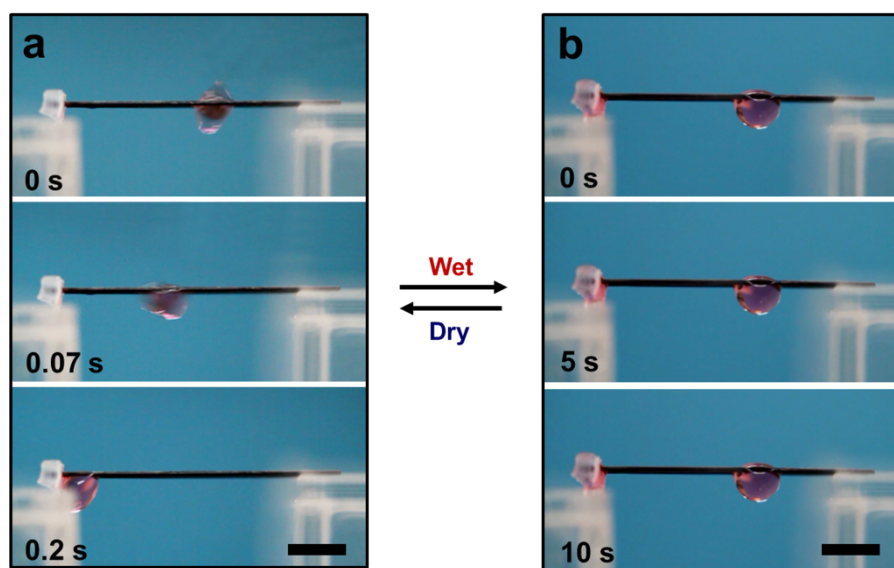


Fig. S2 *In situ* side-view observation of the manipulated open-close responsive switch. (a) and (b) Side-view Observation of the directional water transportation when the switch was in “open” state and the pinning of tiny droplet when the switch was “closed”, (scale bar: 5 mm).

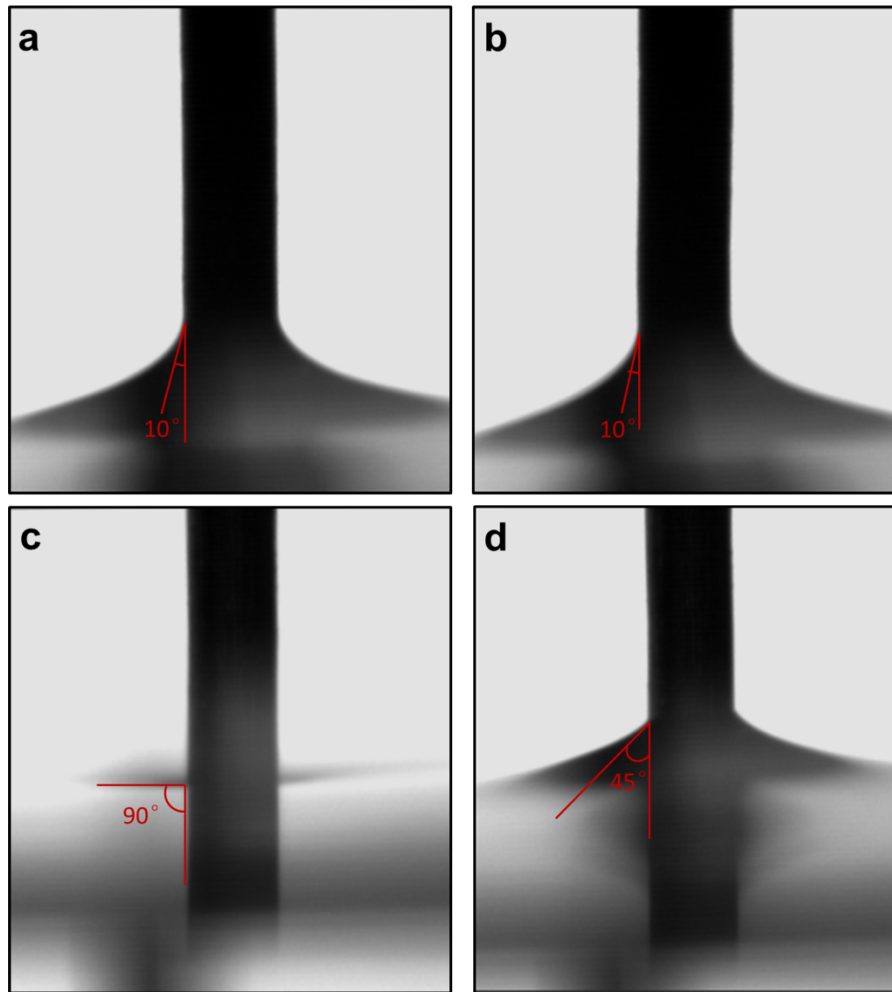


Fig. S3 The advancing angle (θ_1) and the receding angle (θ_2) of the modified / unmodified copper wire. (a) and (b) θ_1 and θ_2 of the modified copper wire were respectively equal to 10° , so the phenomenon of contact-angle hysteresis did not exist. (c) and (d) θ_1 and θ_2 of the unmodified copper wire respectively equaled 90° , 45° and there was a high contact angle hysteresis.