Supplementary Information

The UV-driven self-replenishing slippery surfaces with programmed droplet-guiding pathway

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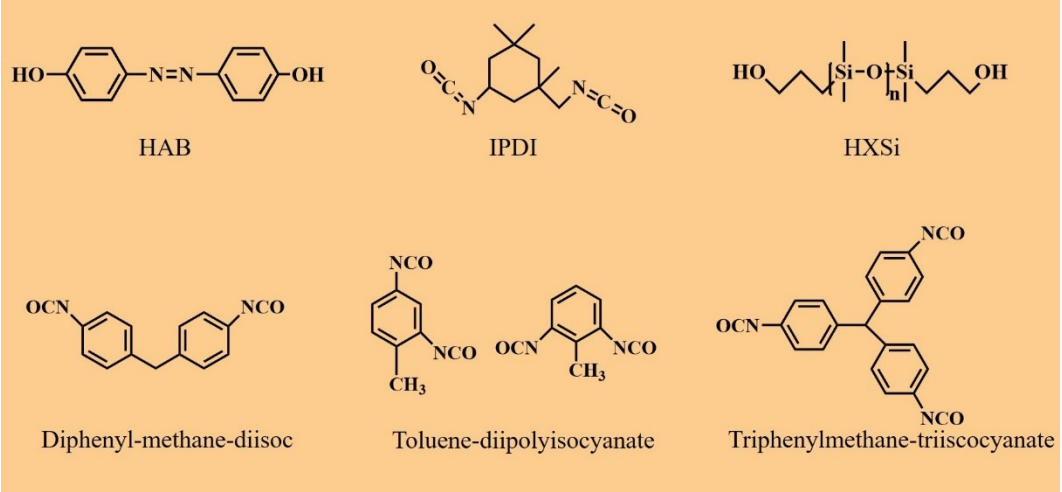

Fig.S1 The chemical structure of HAB, IPDI, HXSi and MDI.

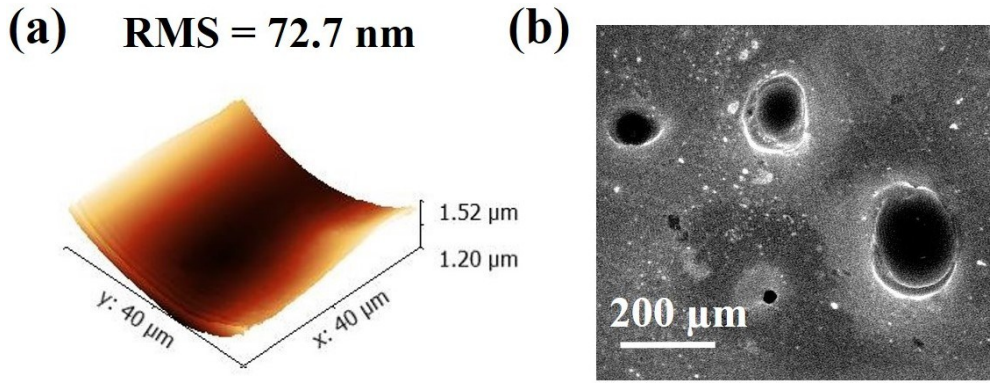

Fig.S2 (a) 3D AFM height images of UVRSs, Scanning rage: 40 × 40 μm^2. (b) SEM image of

UVRSs after swabbing.

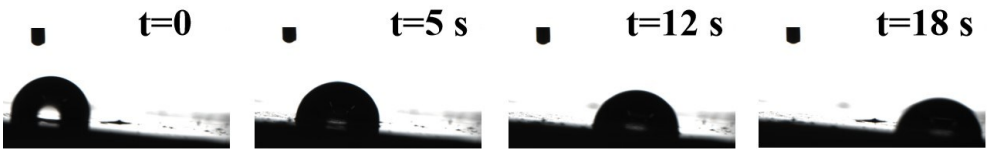

Fig.S3 Photographs showing the dynamic mobility of a water droplet (7 μL) on UVRSs with a low tilting angle (~5°).

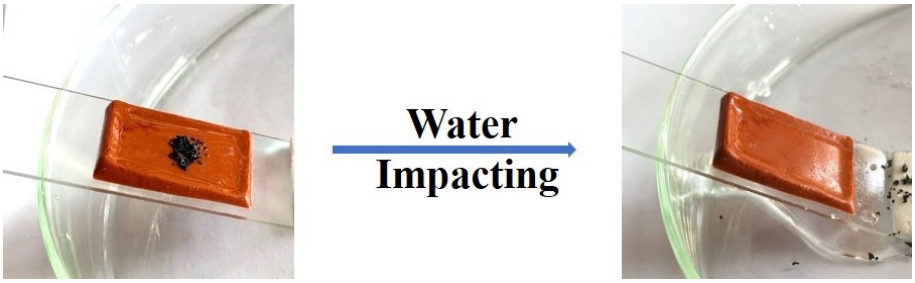

Fig.S4 Self-cleaning tests by employing the carbon black particles as model pollutants on UVRSs.

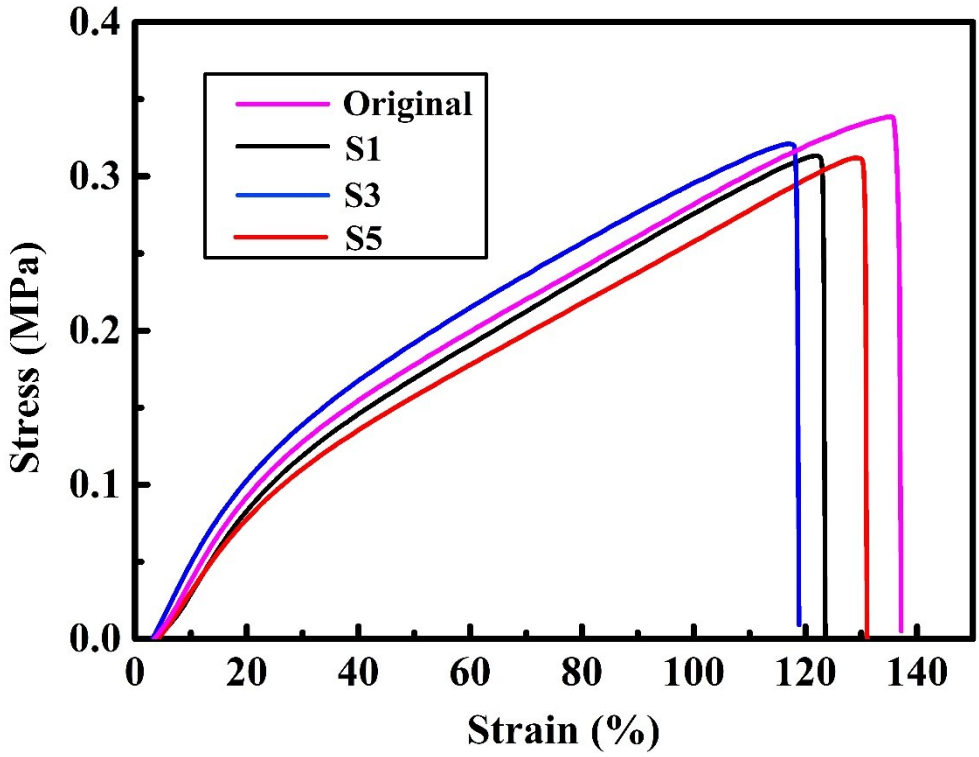

Fig.S5 Stress-strain curves of the original substrate and the self-healed samples that experienced 1,

3 and 5 times self-healing process.

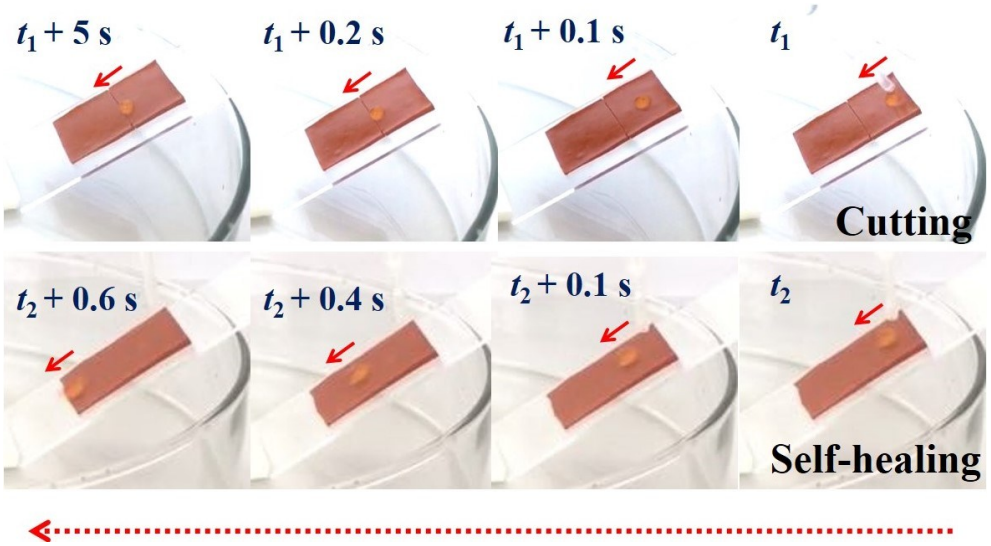

Fig.S6 A moving water droplet pinned on the physical damage line on the tilted surface and moved continuously on the self-healed UVRSs.

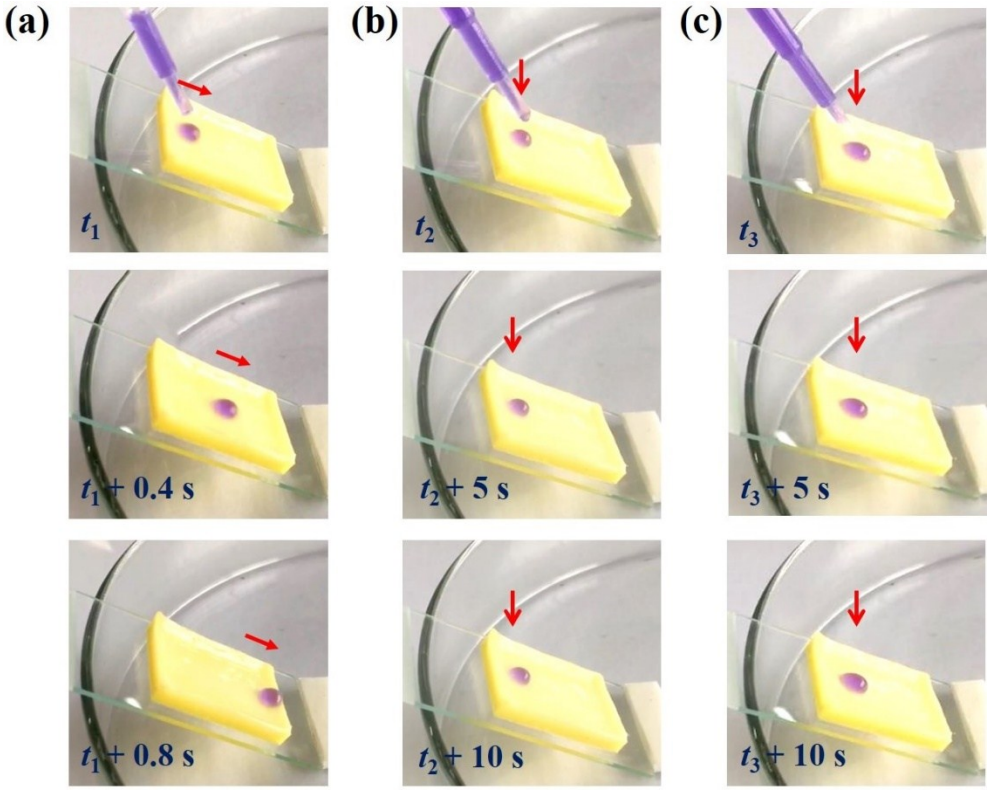

Fig.S7 Dynamic control of water droplet on a titled NUVRSs of 30°. (a) Process of water droplet

slipping off the NUVRSs at initial state. (b) Process of water droplet pinned on the NUVRSs after the surface lubricant oil was swabbed. (c) Process of water droplet still pinned on the NUVRSs after UV irradiation.

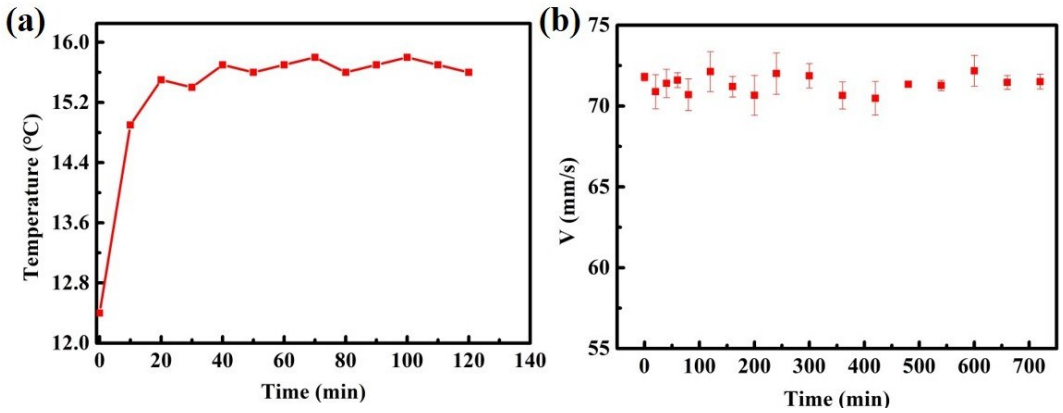

Fig.S8 The variety of surface temperature (a) and sliding rate (b) of UVRSs after exposed to the UV light for 2 h and 720 min.

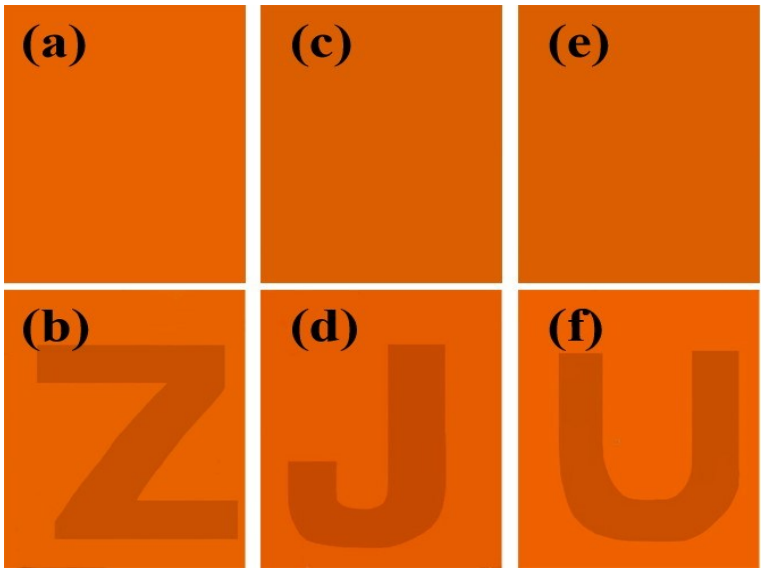

Fig.S9 The surface color change under UV irradiation or visible light illumination. (a) The original state of UVRSs. The slippery surface was irradiated under UV light with Z-shape UV mask for the first time (b), “J-shape” UV mask for second time (d) and U-shape UV mask for the third time (f). The slippery surface was illuminated under visible light for the first time (c) and second time (e).

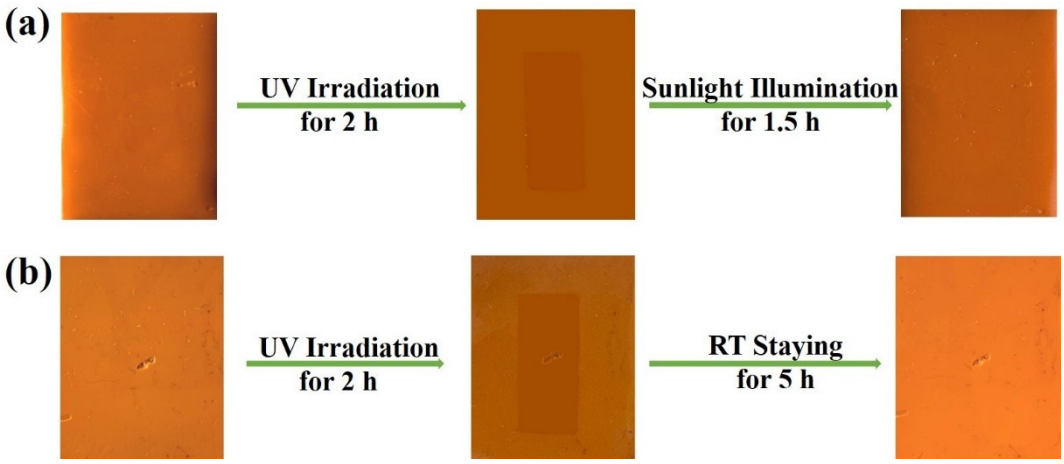

Fig.S10 The process of surface color change and recovery under UV light irradiation and sunlight illumination/room temperature, respectively.