Electronic Supplementary Information (ESI)

Daphnia-inspired dynamic slippery chemically bonded liquid surface for active prevention of covalently attached foulants adhesion

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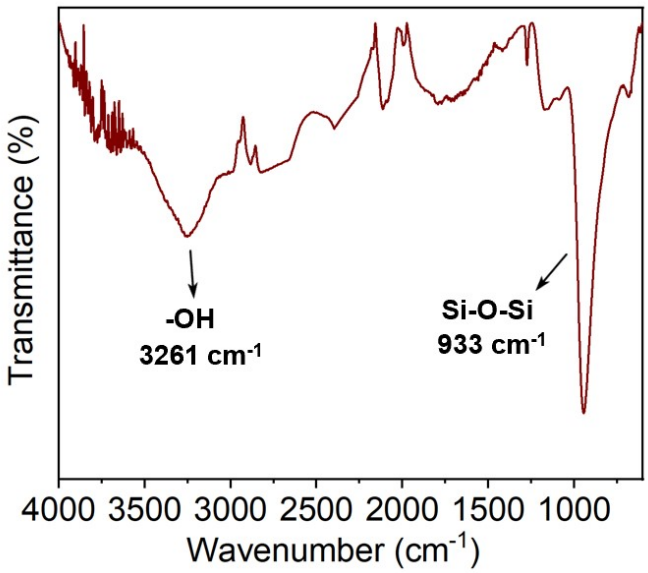

Fig. S1 FTIR spectrum of SiO_2 electro-deposited Al substrate.

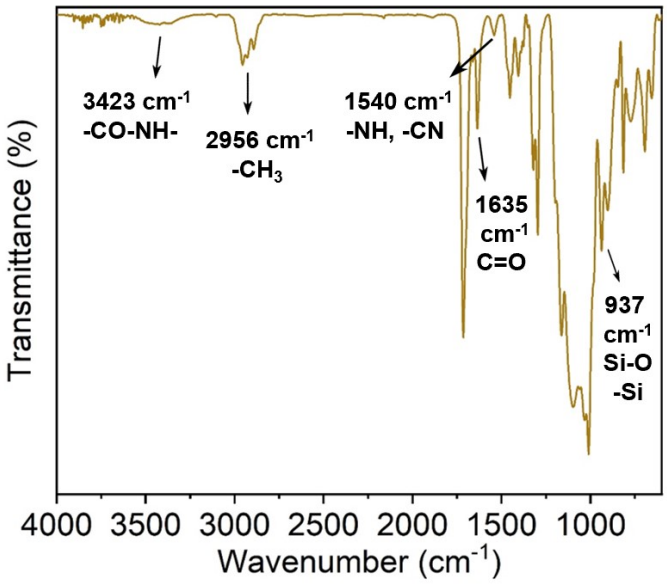

Fig. S2 FTIR spectrum of PDMS-free surface.

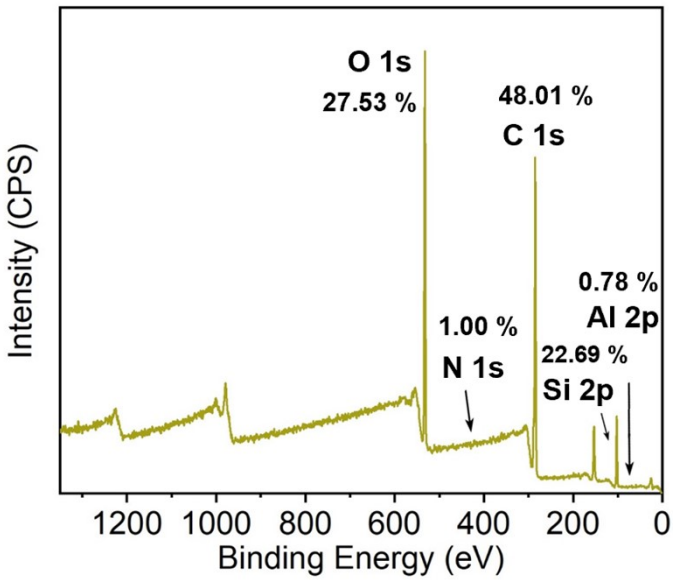

Fig. S3 XPS spectrum of PDMS-free surface.

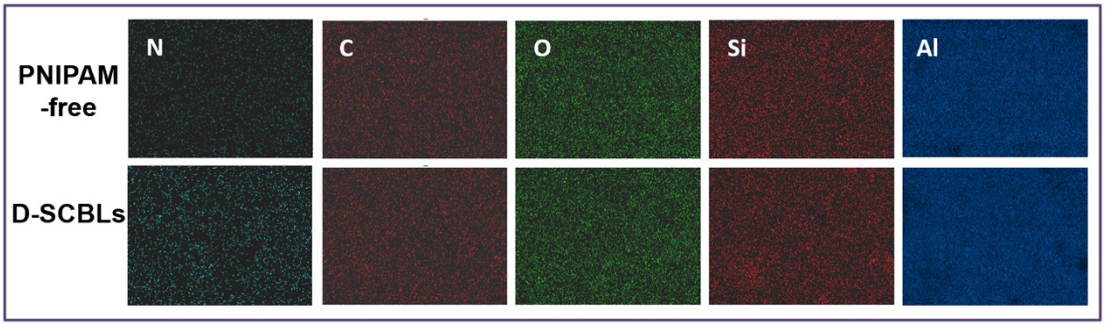

Fig. S4 Elemental mappings of the PNIPAM-free surface and D-SCBLs.

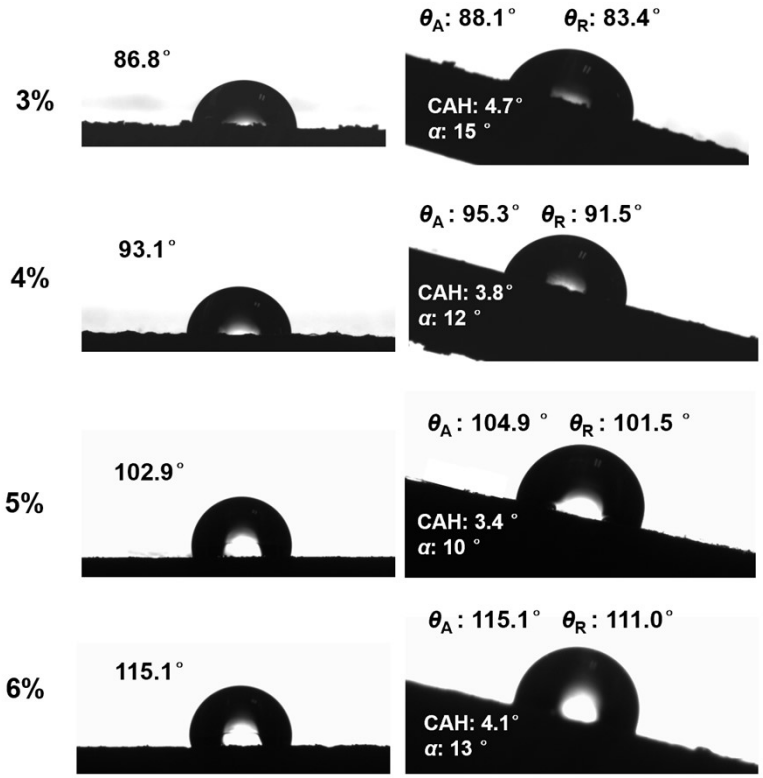

Fig. S5 Water CAs, ϑ_A, ϑ_R, CAH, and α of D-SCBLs prepared with different concentrations (wt%) of NIPAM.

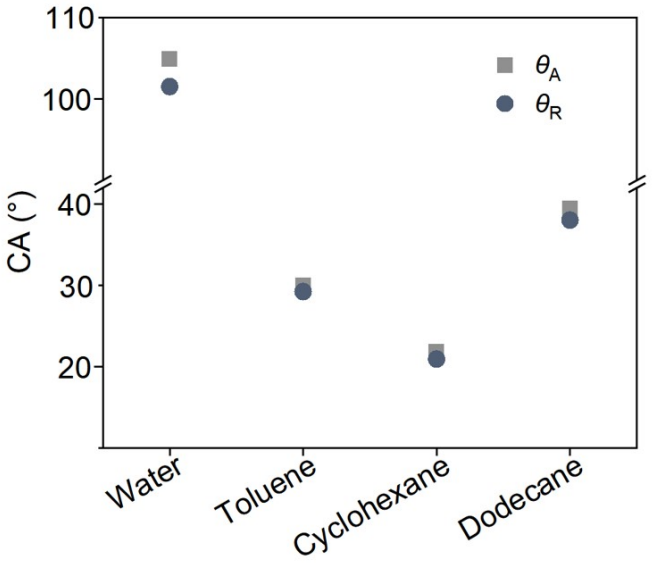

Fig. S6 CAs of various liquids on the D-SCBLs.

Video S1 Sliding test of water droplet on the D-SCBLs.

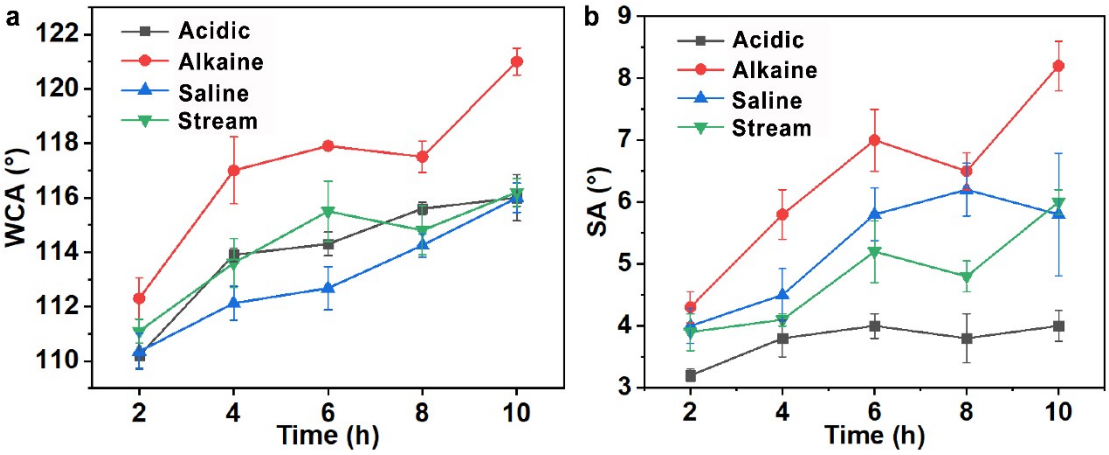

Fig. S7 (a, b) Chemical resistance and mechanical durability tests of the D-SCBLs as a function of immersion times in acidic, alkaline and saline solutions together with water stream scouring time, respectively.

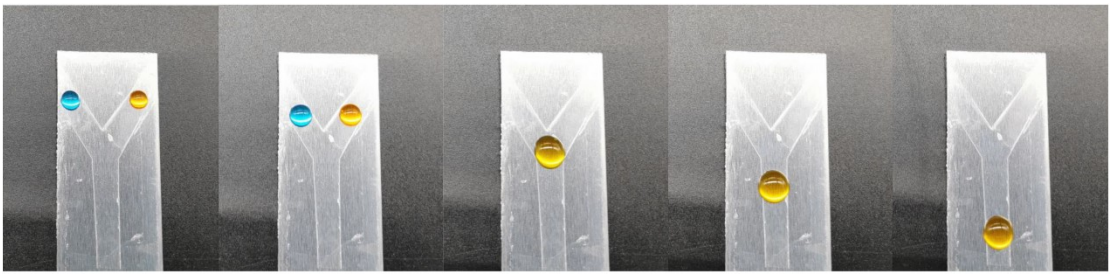

Fig. S8 Droplets motion on the D-SCBLs with Y-shaped path as a transportation channel. Two water droplets were dyed blue and green, respectively.

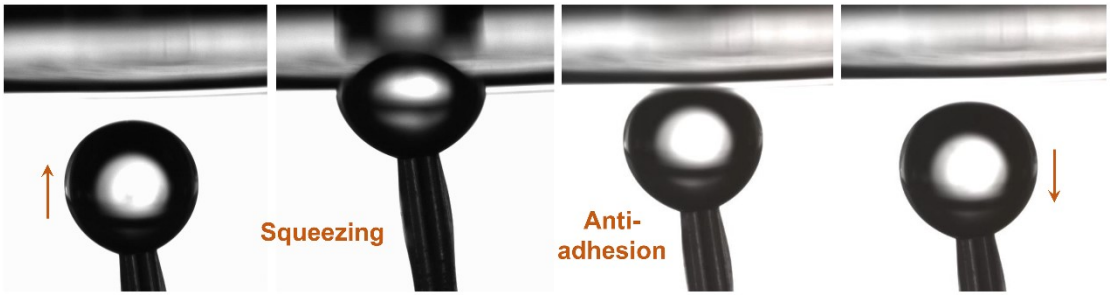

Fig. S9 Photographs of the dynamic underwater oil-adhesion measurements on the D-SCBLs. An engine oil droplet (3 μL) was utilized as the detecting probe to contact and leave the surface.

Fig. S10 Water CAs of the PNIPAM-free surface and D-SCBLs.

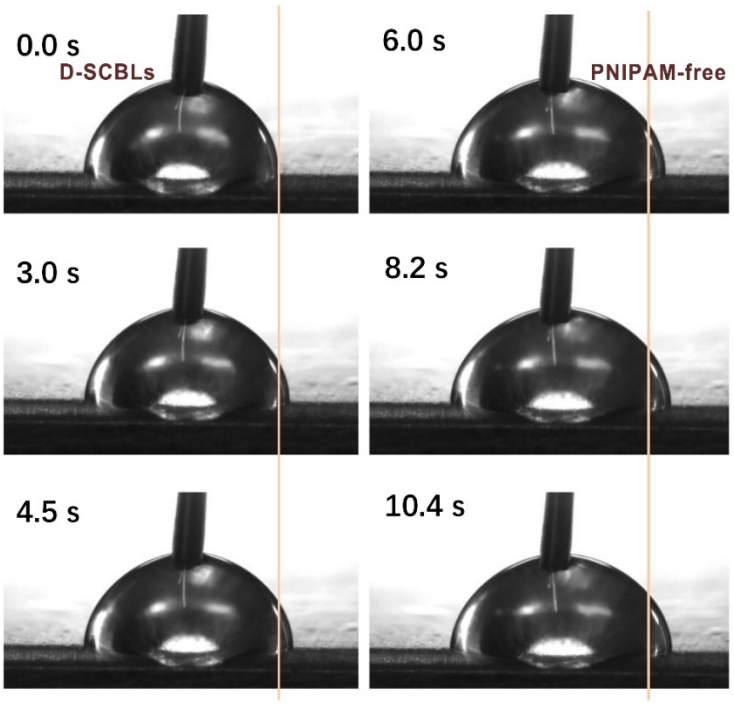

Fig. S11 Dynamic process of a seawater droplet motion at the boundary between D-SCBLs and PNIPAM-free surface.

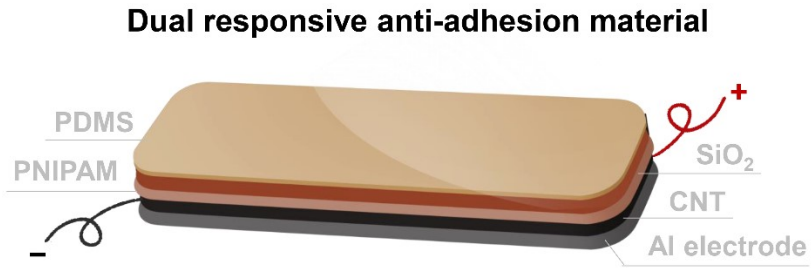

Fig. S12 Schematic illustration of a possible designed dual responsive anti-adhesion material derived from the D-SCBLs.

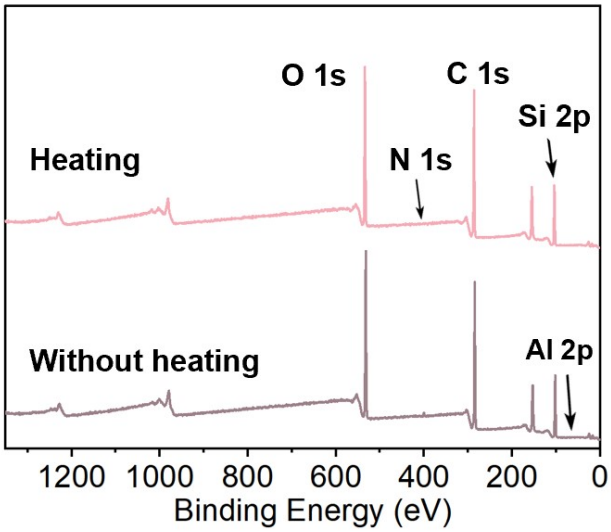

Fig. S13 XPS spectra of D-SCBLs after being immersed in BSA solution under heating or without heating processing, respectively.

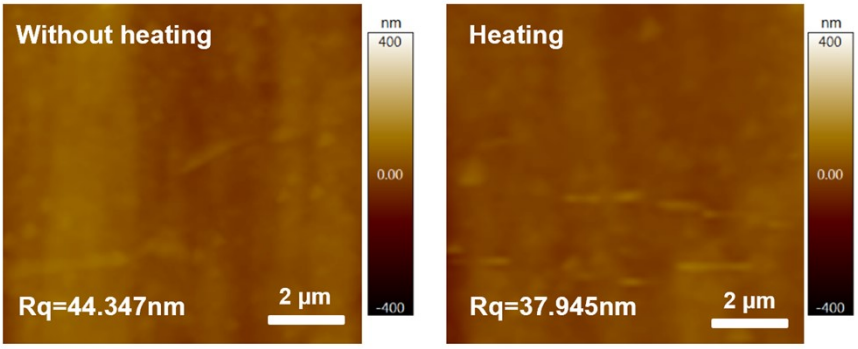

Fig. S14 AFM images of D-SCBLs after being immersed in BSA solution under heating or without heating processing, respectively.

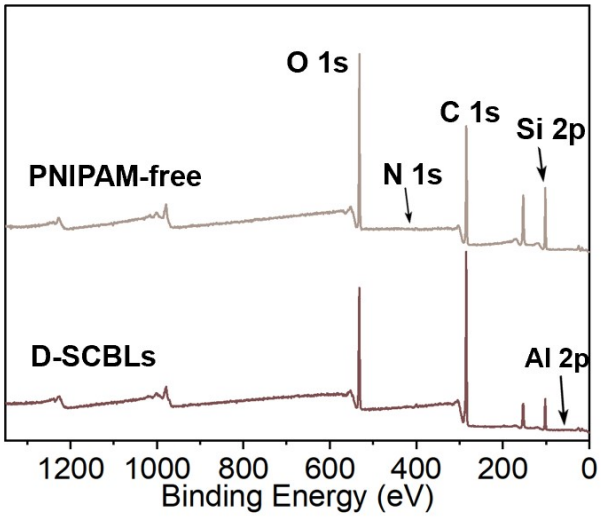

Fig. S15 XPS spectra of the D-SCBLs and PNIPAM-free surface after being immersed in dopamine solution for 6 h, respectively.

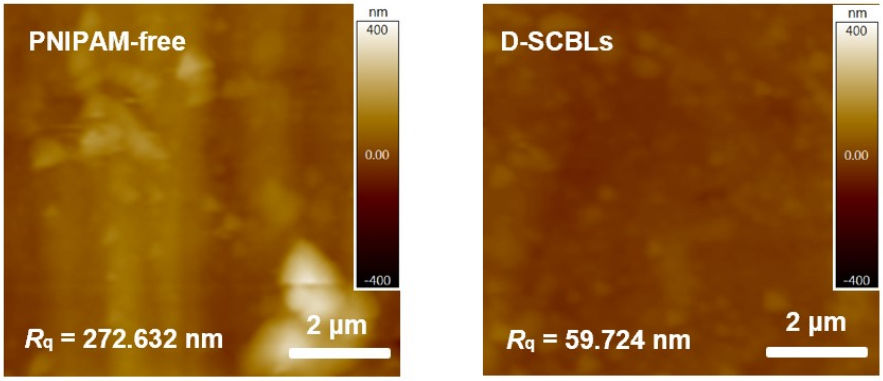

Fig. S16 AFM images of the PNIPAM-free surface and D-SCBLs after being immersed in dopamine solution for 6 h, respectively.

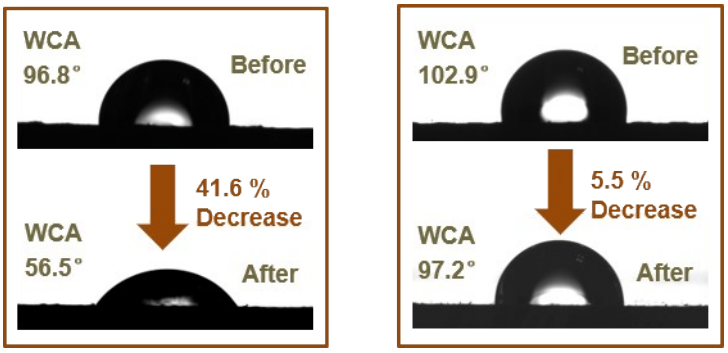

Fig. S17 Water CA variations of the PNIPAM-free surface and D-SCBLs after being immersed in dopamine solution for 6 h, respectively.

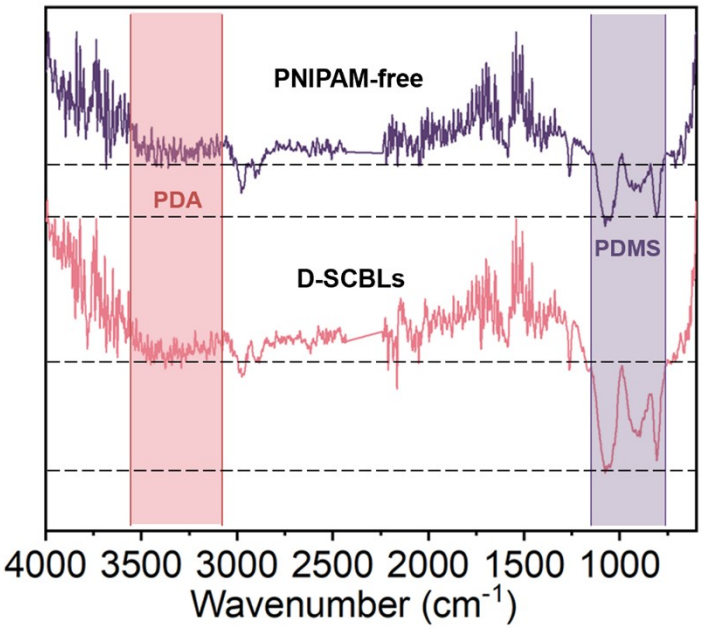

Fig. S18 FTIR spectra of the PNIPAM-free surface and D-SCBLs after being immersed in dopamine solution for 6 h, respectively.

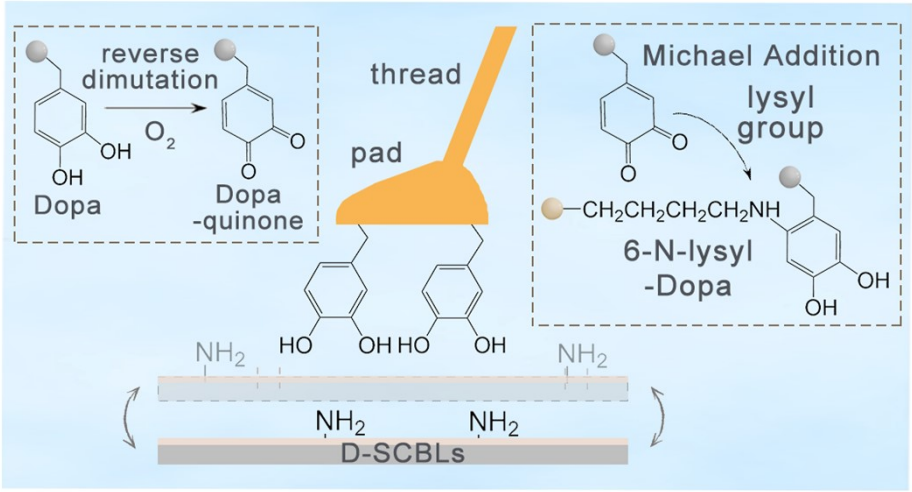

Fig. S19 Schematic illustration of the anti-adhesion mechanism of D-SCBLs.

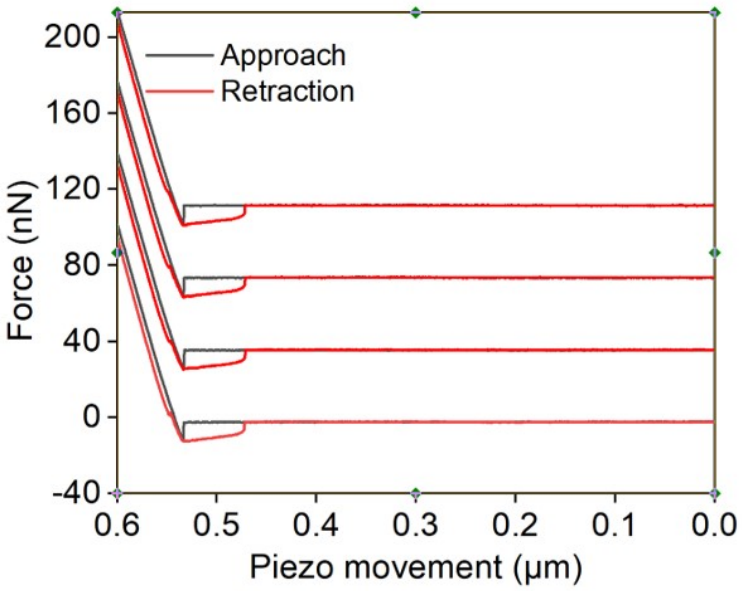

Fig. S20 F-D curves of PDA-modified AFM tip interacting with the pristine D-SCBLs.