Supplementry information

Buoyancy increase and drag-reduction through a simple superhydrophobic coating

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Table S1. Loading weight and downforce edge-, top- and whole surface-coated samples floating on water

Sample	Loading weight (mg/cm^2)	Downforce by weight (mN)
Edge-coated glass slide	160	31
Top coated glass slide	200	39
Whole surface coated glass slide	319	62

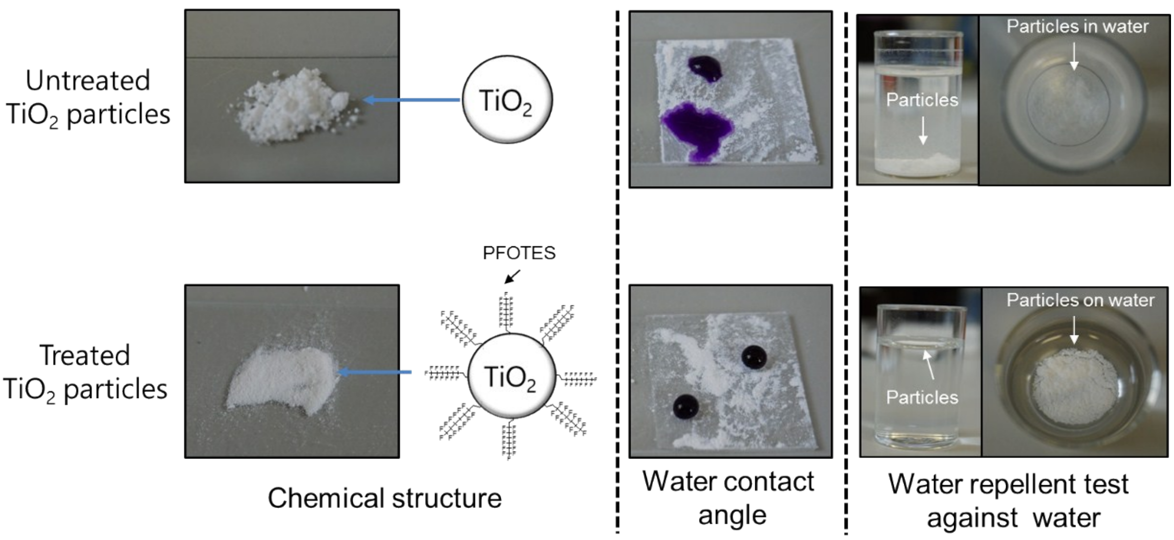

Figure S1. Water repellent and tests of untreated TiO_2 and PFOTES treated TiO_2 particles.

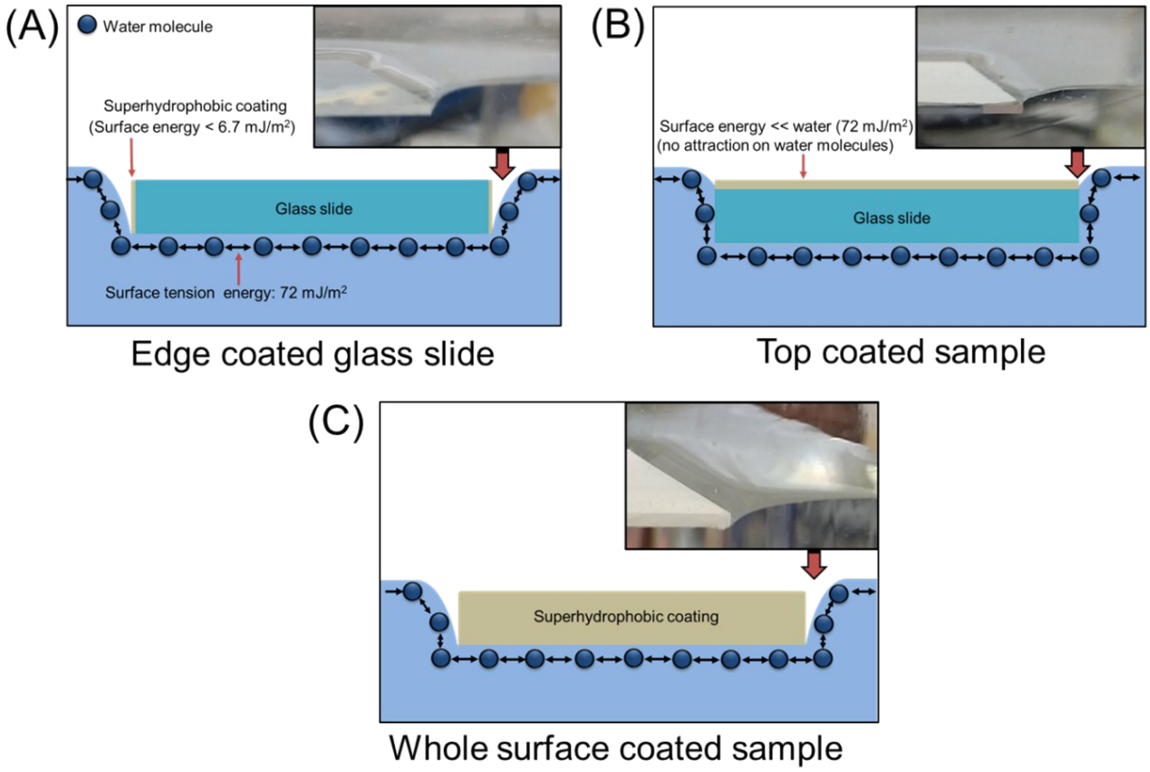

Fig. S2. Schematic illustration of (a) edge-, (b) top-, and (c) whole surface-coated glass samples floating on water

As shown in Fig. S3 (a), the falling speed of the treated sample was slower than that of the untreated sample. This can be explained in that upward force (buoyancy) of significant amount of air bubbles entrapped (Fig. S3 (b)) on superhydrophbic surface retarded falling of the glass sample.

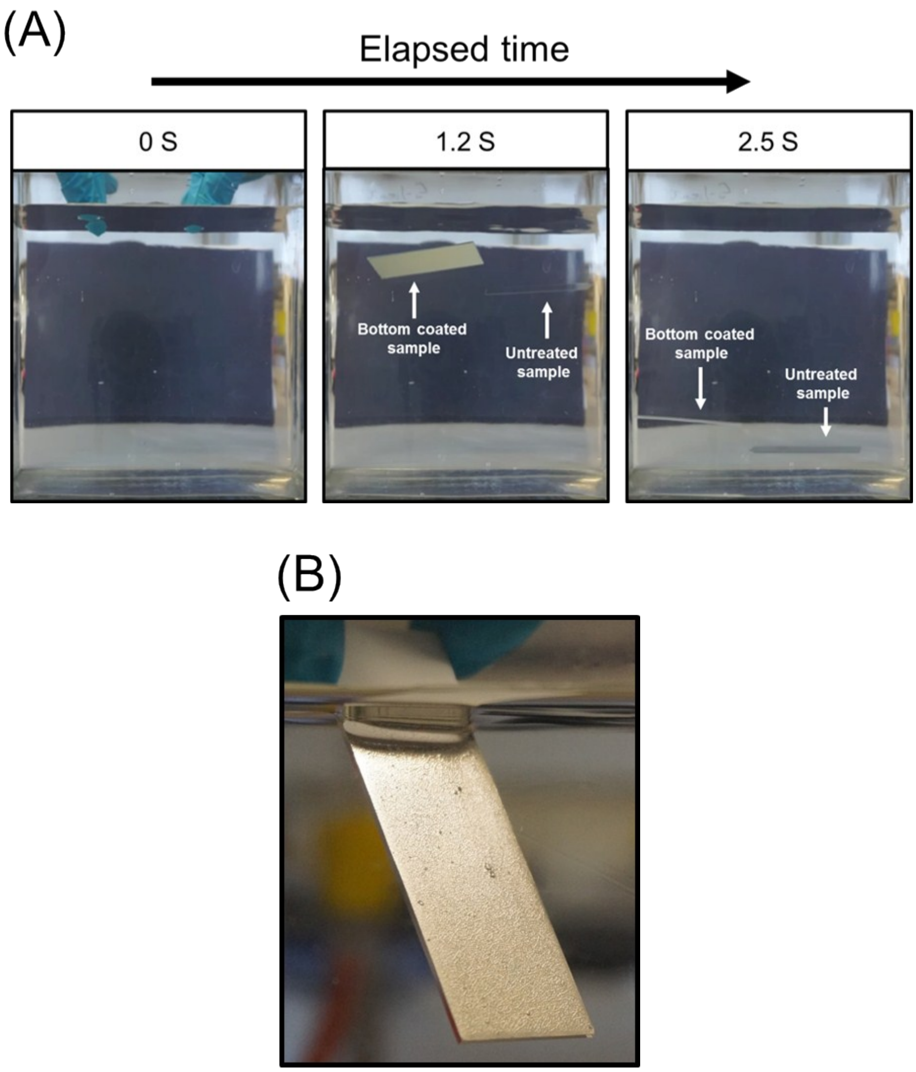

Fig. S3. (a) Photographs of untreated and bottom coated glass slides falling in water, and (b) plastron property of air bubble layer trapped on the treated surface in water

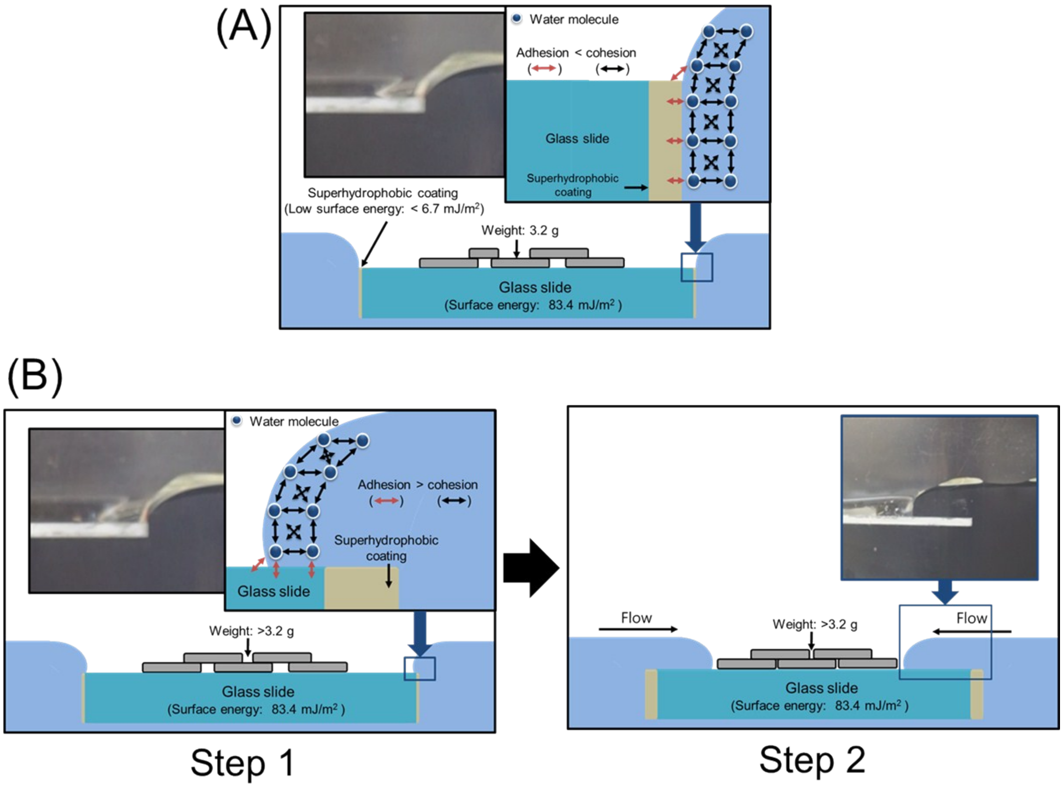

Fig. S4. (a) Schematic illustration of edged coated sample floating on water after the loading of 3.2 g weight (b) the illustration of sinking process of the sample after the loading of > 3.2 g weight.

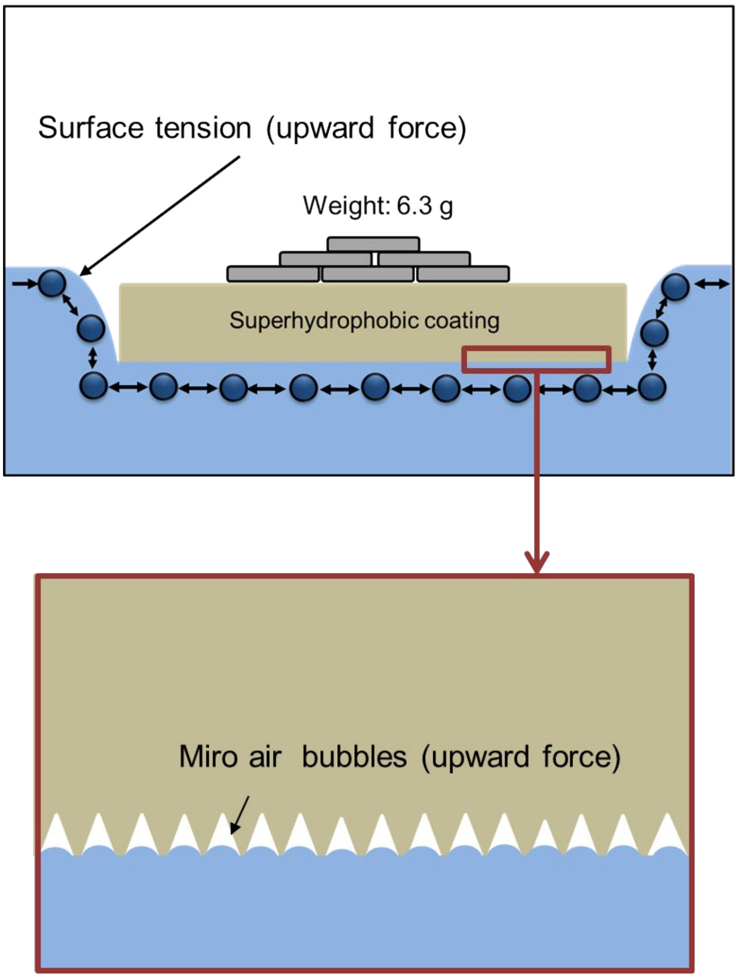

Fig. S5. Supporting forces (water surface tension and micro air bubbles) applied to whole surface-coated samples.

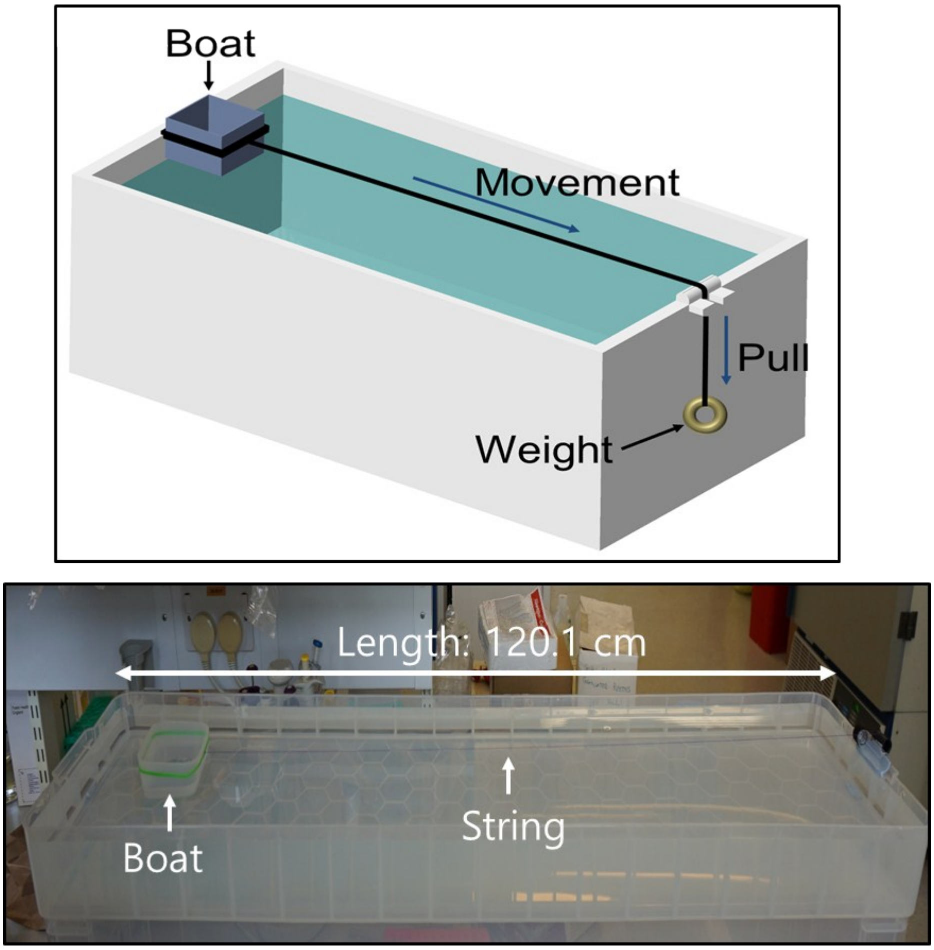

Fig. S6. Illustration of shipping test

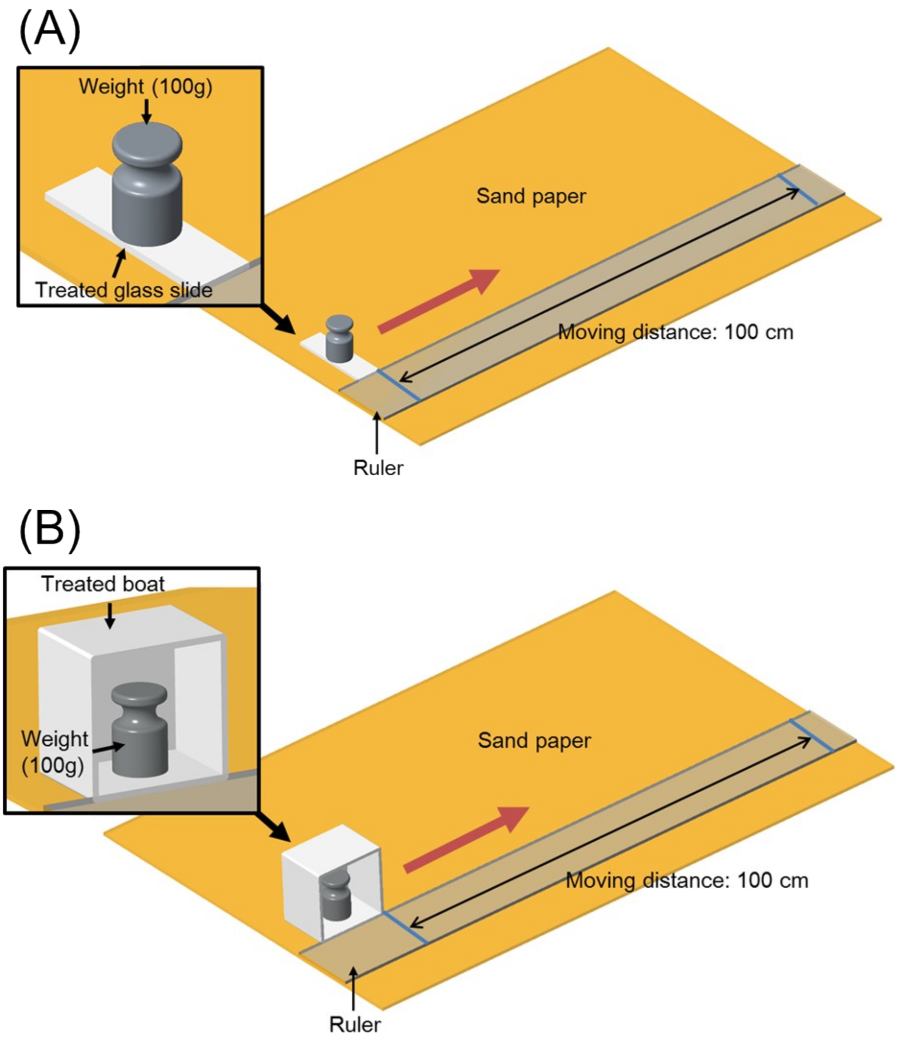

Fig. S7. Abrasion test of (a) superhydrophobic coated glass slide and (b) boat using sand paper