Supplementary Information

An electric-field-dependent drop selector

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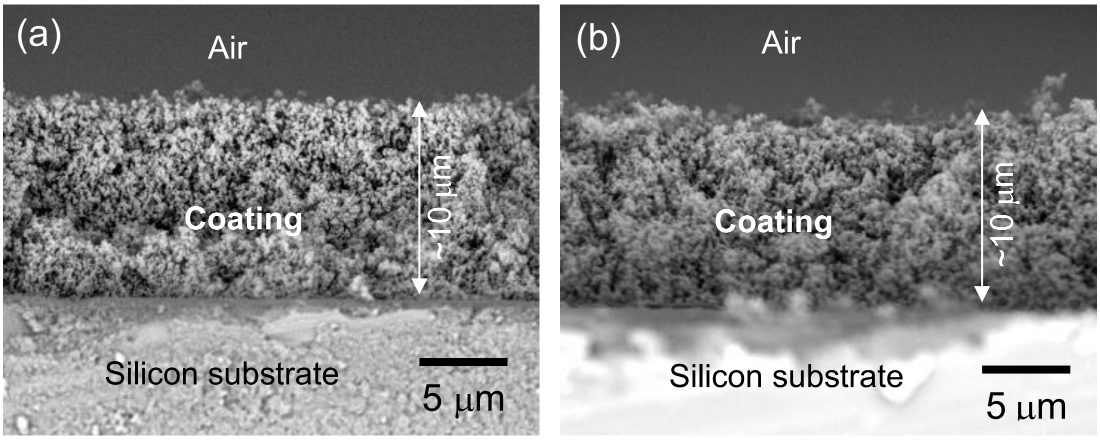

Figure S1. SEM image of a cross section of superhydrophobic coating scanned from two samples (a and b). The thickness of the porous structures is controlled consistently at ~10 μm.

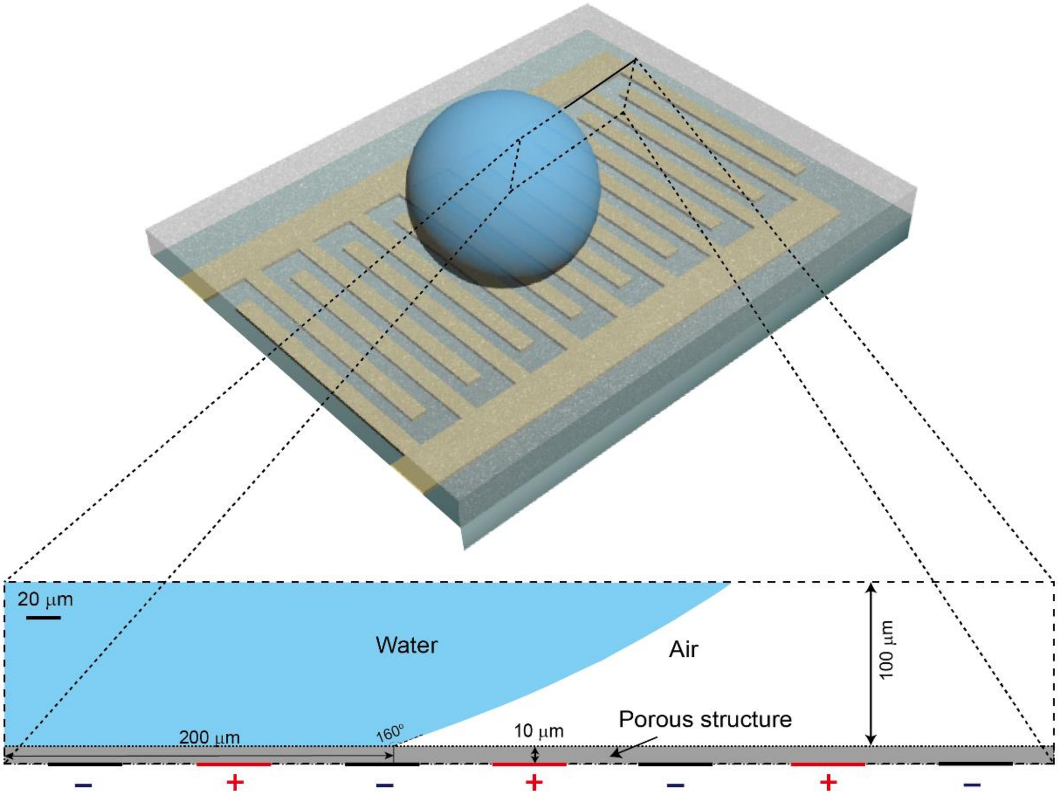

Figure S2. Computational domain. A vertical two-dimensional domain (550 × 110 μm) at the center of the drop is selected as the region of interest. The electric field is assumed symmetric so that only half of the domain is considered in the analysis. Current continuity condition is applied at air-water, air-substrate, and water-substrate interfaces. Symmetric condition is applied at the symmetric axis and insulation condition is applied at the rest of boundaries of the domain. The constant potential conditions are applied at the electrodes.

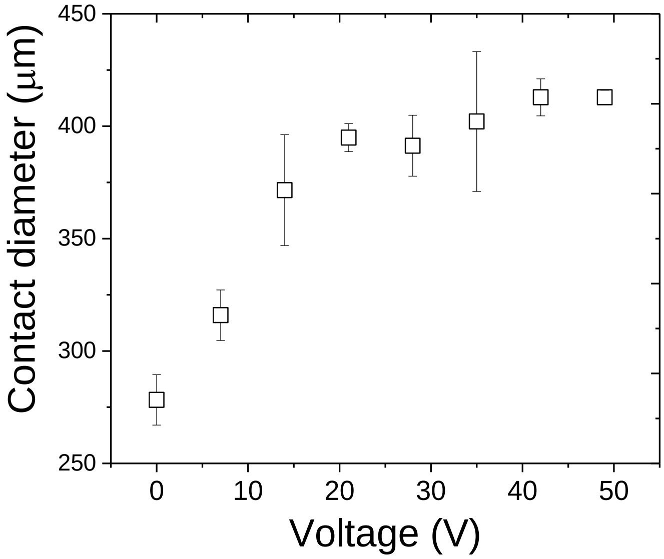

Figure S3. The measured contact diameter as a function of applied voltage.

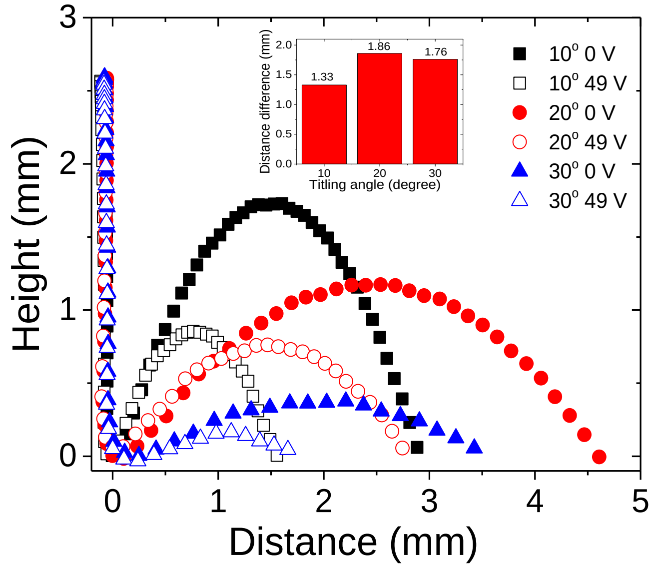

Figure S4. Drop bouncing distance as a function of the applied voltages under three tilting angles. Inset is the difference of distance when drop bounds on the three tilting angles at the same releasing height. It is concluded that the optimized tilting degree to generate the largest distance difference is 20°.

Table S1. The properties of materials used in the simulation.

	Electrical conductivity (S/m)	Dielectric constant
Air	1×10^{-9}	1
Porous structure	1×10^{-9}	2
Water	5.5×10^{-6}	80

Video S1. Comparison of adhesion force measured at voltages of 0 V and 42 V.

Video S2. Comparison of drop rebounding at voltages of 0 V and 42 V at releasing height of 3 mm.

Video S3. Comparison of drop rebounding at voltages of 0 V and 42 V at releasing height of 9 mm.

Video S4. Reproducibility of separating drops under electric field.