Supplementary Material (ESI) for *Nanoscale*

Electronic Supplementary Information (ESI)

Fabrication of biomimetic superhydrophobic surfaces inspired from lotus leaf and silver ragwort leaf †

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Materials. The starting materials were used in this study including PS (M_w=208 000, Wako), tetrahydrofuran (THF) and *N*,*N*-dimethylformamide (DMF) (Shanghai Chemical Reagents Co., Ltd.), silica nanoparticles (diameter of particles: 7-40 nm, specific surface area: 120 m^2g^{-1}, Aladdin). All of the materials were used without further purification. Electrospinning solutions were prepared by dispersing controlled content of silica nanoparticles (0, 7.7 and 14.3 wt.% relative to PS) into 30 wt.% PS dissolved in the THF and DMF, respectively.

Electrospinning. The electrospinning solution was placed in a syringe connected with a metal needle that was controlled by a syringe pump (LSP02-1B, Baoding Longer Precision Pump Co., Ltd., China) fixed to a support that could be moved with a speed of 6 m/min along a slipway at a flow rate 3 mL/h. A high voltage power

supply (DW-P303-1ACD8, Tianjin Dongwen High Voltage Co., China) was used to generate a voltage of 20 kV between the needle and an aluminum foil-covered grounded metallic rotating roller placed 15 cm from the tip of the needle rotated at 100 rpm. All the experiments were carried out at 24 ^{o}C with the relative humidity of 40%.

Characterization. The morphology of the electrospun PS fibrous mats was examined by a field emission scanning electron microscopy (FE-SEM) (S-4800, Hitachi Ltd., Japan). The WCA and WCAH were observed by a contact angle meter (Contact Angle System OCA40, Dataphysics Co., Germany) at room temperature. Measurements from at least six droplets of 8 mg of freshly distilled pure water were averaged. Fourier transform infrared (FTIR) spectra were determined with Avatar 380 FT-IR spectrometer in the range 4000-500 cm^{-1}. Atomic force microscopy (AFM) images were taken with a scan size of (5 μm×5 μm) using the tapping mode of AFM (Nanoscope Ⅳ, Digital Instruments).

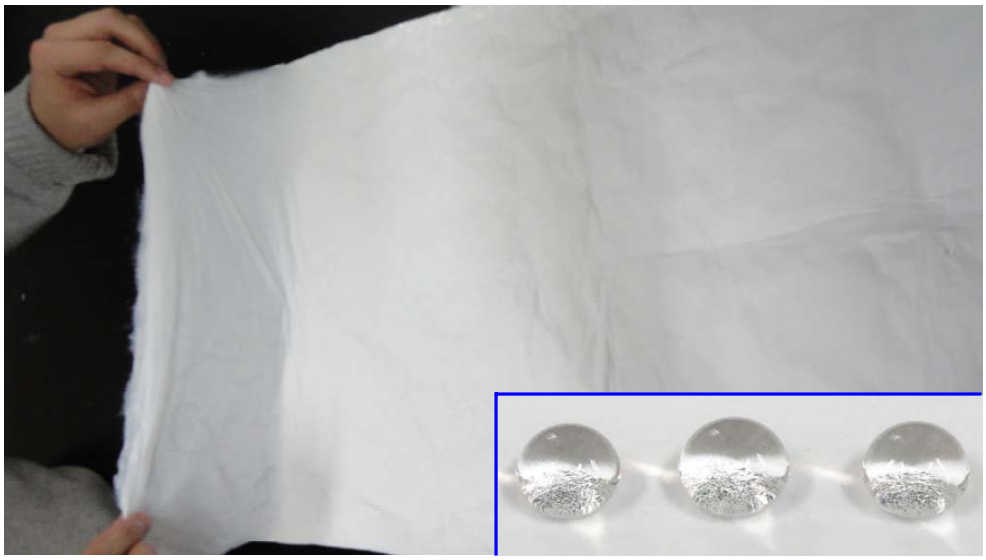

Fig. S1 Several water droplets placed on the PS fibrous mats formed from DMF with 7.7 wt% silica showing the superhydrophobicity.