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Supporting Information

Broadband antireflective superhydrophobic self-cleaning coatings based on novel dendritic porous particles

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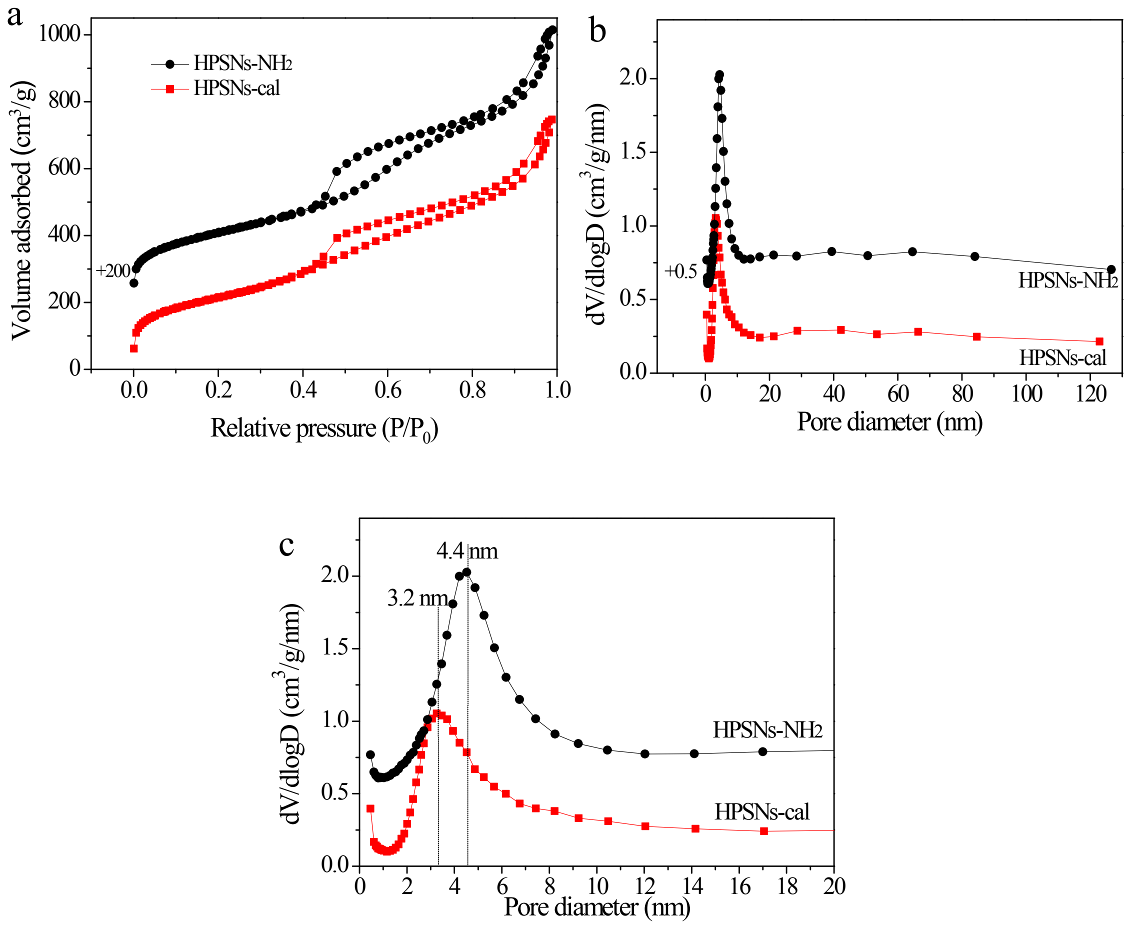

Figure S1. N_2 sorption isotherms of (a) the extracted sample (HPSNs-NH_2) and the calcined (550 °C for 5 h) sample (HPSNs-cal), (b) their corresponding BJH pore size distribution curves and (c) the amplified part of the pore diameter of 0-20 nm in (b), which are shifted along y axis, respectively, for clarity.

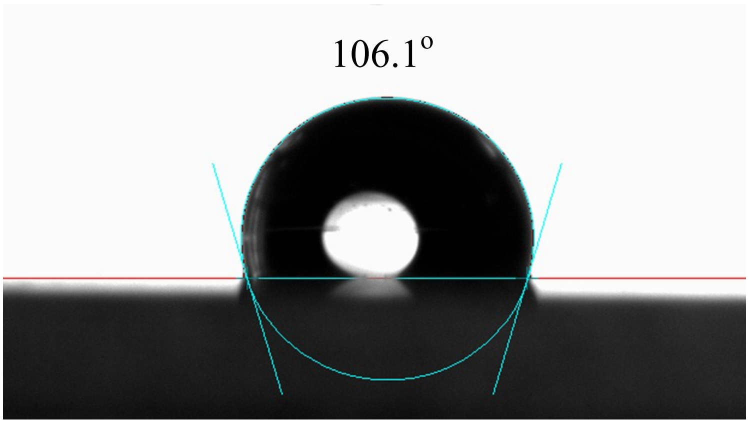

Figure S2. Digital image of WCA on the coating surface of blank glass slide after hydrophobic modification.

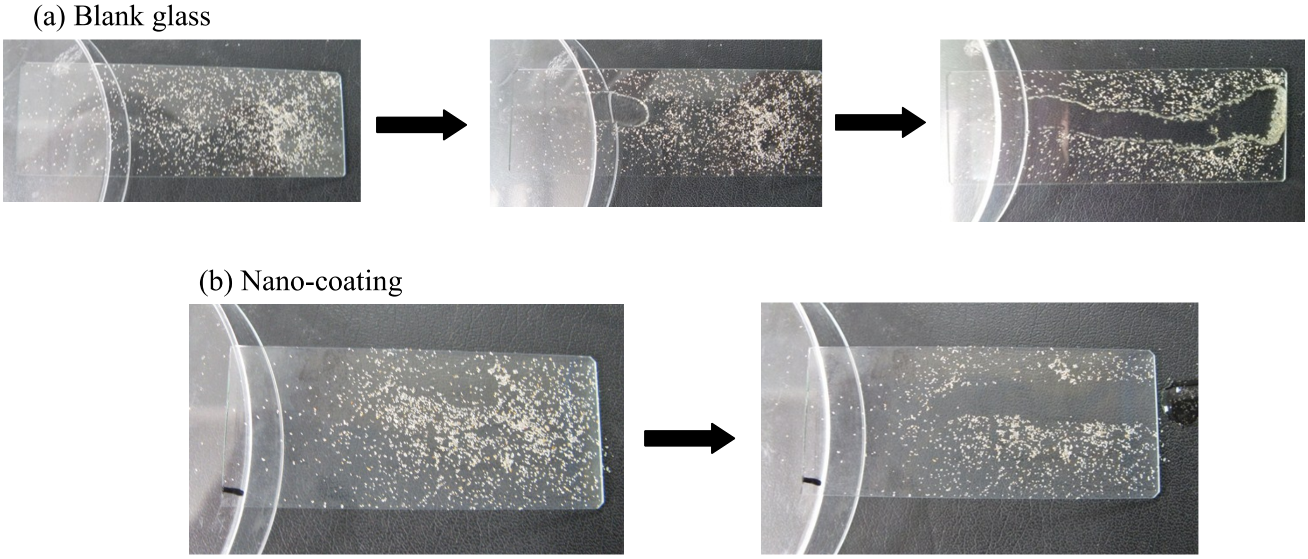

Figure S3. The rolling down process of water droplet (50 μL) from the surface of blank glass (a) and 3-dip SSNs + 4-dip HPSNs coating followed by calcination and hydrophobic modification (b) with sand grains on the surface. The rolling down process shows that the sand grinds as contaminants were immediately adsorbed on the surface of the water droplet (30 μL) along the way whilst rolling off the coating surface in less than 1 s for 5 cm distance, and the adsorbed contaminants could no longer leave the water droplet to contaminate the surface again. This observation confirms that the water surface tension plays a key role in adsorbing contaminants, and one small water droplet could clean a very long distance until most of the water droplet surface was covered by contaminants. In contrast, the water droplet wriggles on the surface of blank glass slide very slowly (more than 20 s for 5 cm distance), and can't finally leave the bottom edge of blank glass slide.

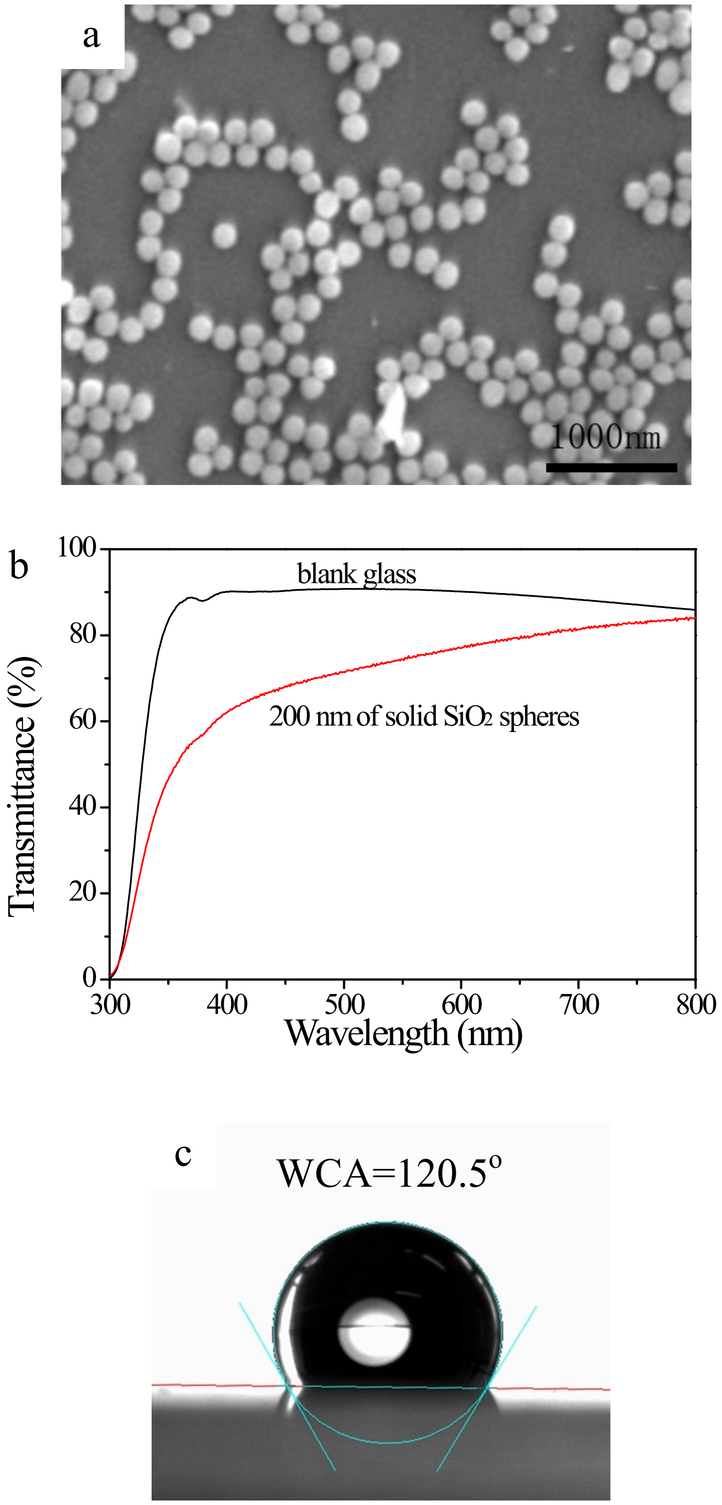

Figure S4. (a) SEM image of coating fabricated by dip-coated 200 nm of solid silica nanoparticles (SSNs). (b) UV-Vis-NIR transmission spectra of blank glass slide and glass slide with 200 nm of SSNs coating. (c) Digital image of WCA on the surface of glass slide with 200 nm of SSNs coating, followed by hydrophobic modification.

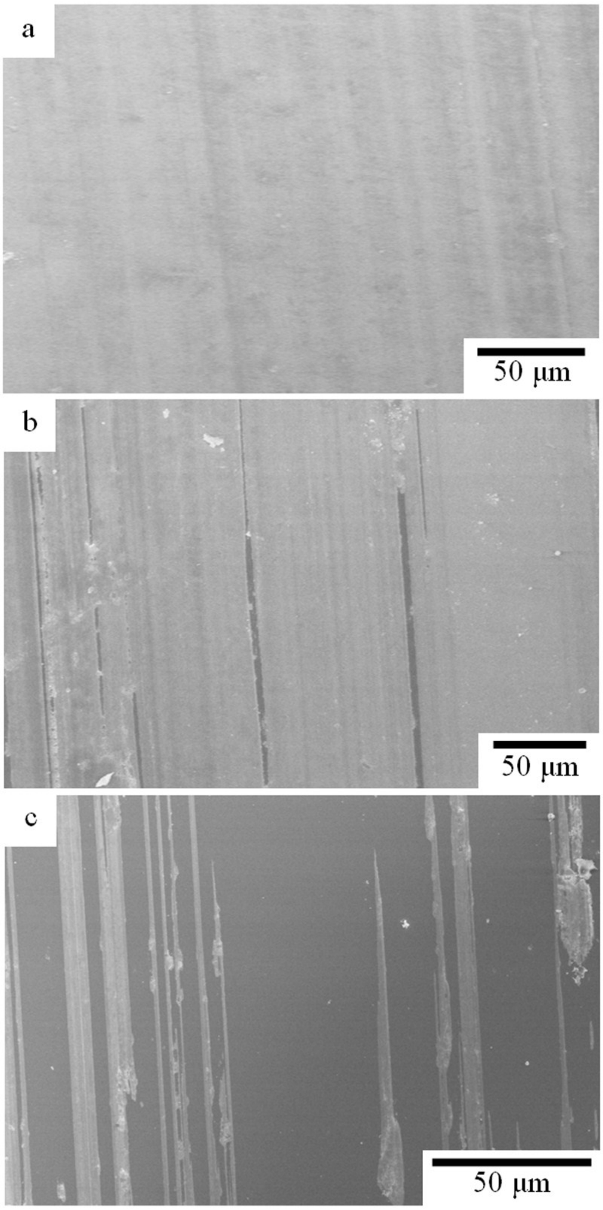

Figure S5. SEM images of the 3-dip SSNs + 4-dip HPSNs coating deposited on the glass substrate followed by calcination and hydrophobic modification, which have been scratched with a 2B (a), B (b) and 1H (c) pencil.