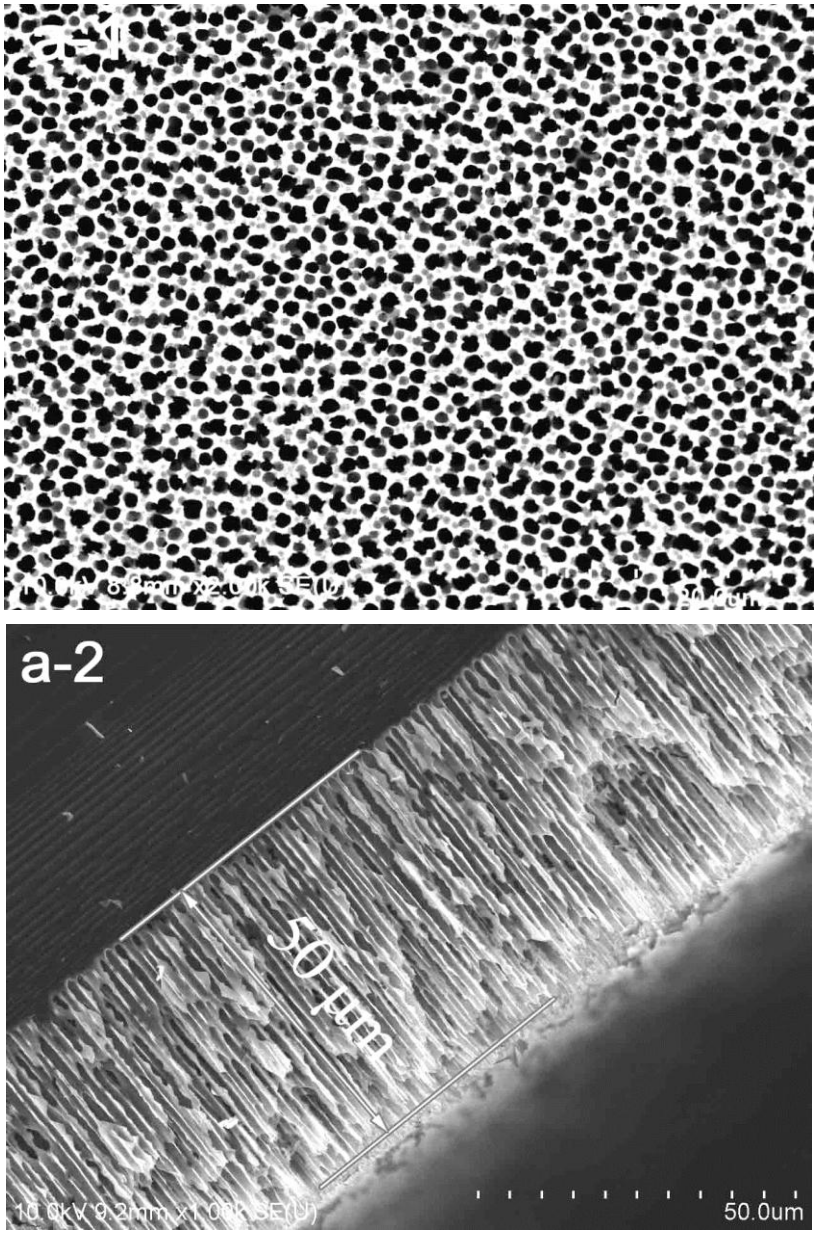
Supporting Information

*1. SEM morphologies of Sample **a***

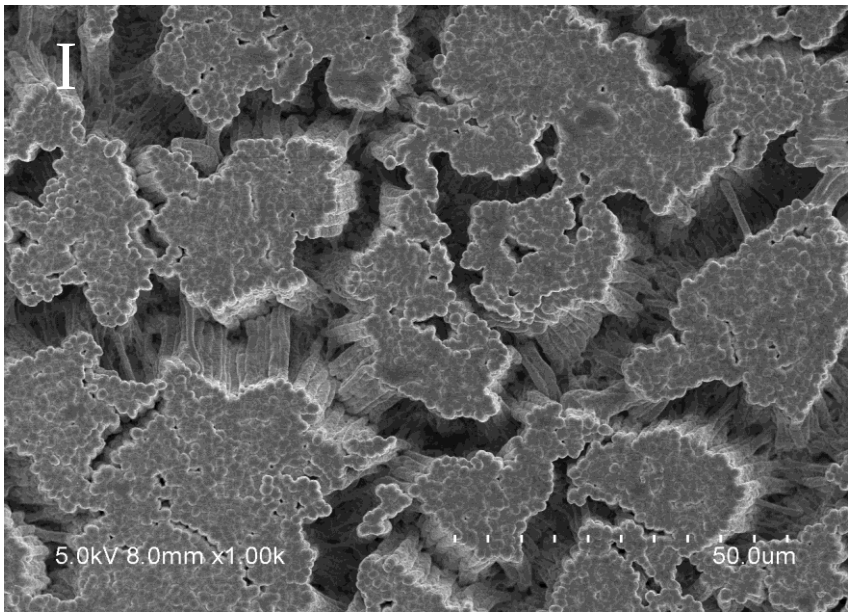
SEM (S4800, Hitachi, Japan) was used to observe the topographical structure of the PSi templates and the micro-seta arrays by using a Schottky field emission source. From the top-view (a-1), the SEM image of Sample **a** exhibits a cylinder-like porous structure: the random pores seem straight and homogeneous, most of their pore radii are in the range of 1.2~1.4 μm. As shown in the cross-sectional SEM image (a-2), all the pores have uniform pore depths whose average value is around 50 μm; and the wall thicknesses of the pores are mostly in the range of 0.4~0.5 μm.

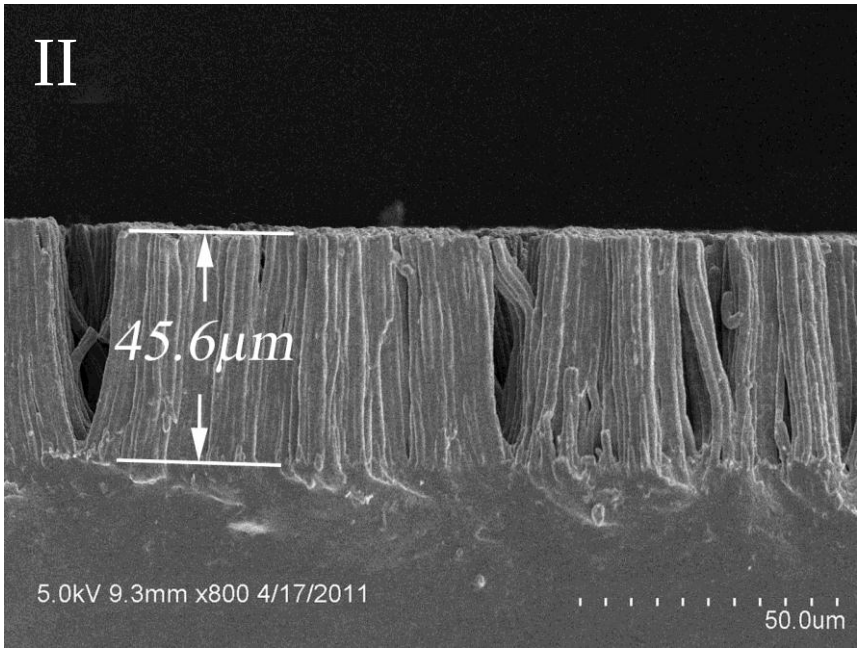


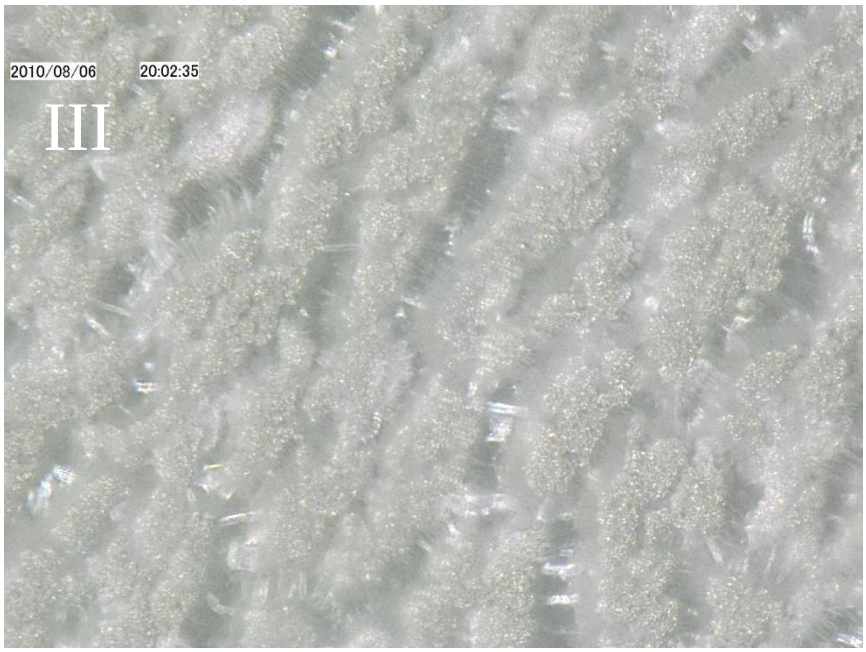
s-Figure 1. The top-view (**a**-1) and cross-sectional (**a**-2) SEM images of Sample **a**.

2. Comparison of SEM image with optical image of artificial setal array

Optical image of the setal array was captured by 3D optical microscope (Keyence, VHX-600) with magnification of 1,000 times. For SEM observation of PDMS setae, Au particles of a mean radius of around 10 nm was coated on setal surface, which may filled the pitches of setal stalks and increased the self-buckling. For optical observations, limited by the imaging depth, the setal morphology cannot be fully presented.



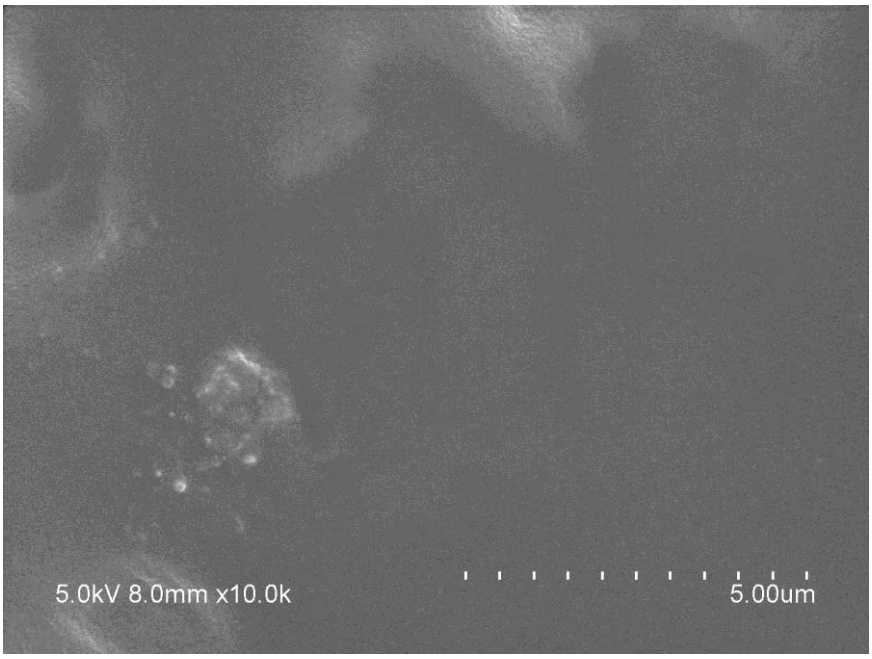




s-Figure 2. Top-view (I) SEM image of Sample **f** with a magnification of 1000, its cross-sectional image (II), and top-view optical image with a magnification of 1000 (III).

*3. SEM observations of the PDMS casting membranes using Sample**a** as the template*

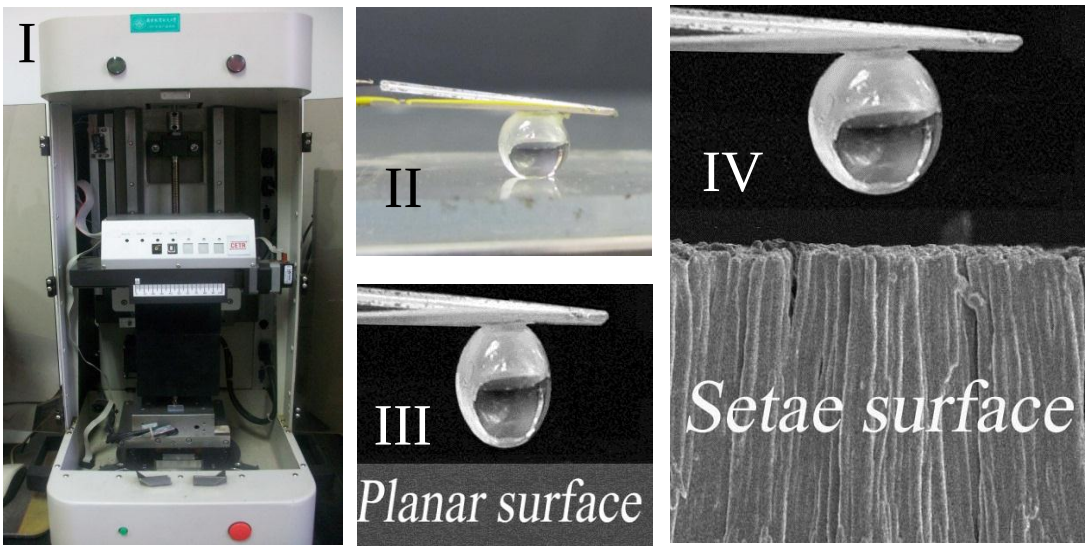
A representative SEM image of the PDMS replica from the template made of Sample a does not show any seta features, even under 10,000X magnification.Casting was performedunder the same experimental condition as that from Sample **d**. The membrane was coated withAu particles.



s-Figure 3. Top-view SEM image of PDMS membrane casting by using Samplea as template.

4. Setup of adhesion detection

Adherence properties were detected by the force-testing system containing one 2-dimensional force sensor (I). A commercially available sapphire ball (Φ=1.87mm) was fixed on its cantilever end, which is stick to force sensor (II). One step motor was controlled by PC to move the sapphire ball. A non-structured PDMS planar membrane and seta-pattered membrane were respectively mounted on the substrate table (III, IV).



s-Figure 4. Setups of the adherence detections.