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Supporting Information

Guiding Bacterial Activity for Biofabrication of Complex Materials *via* Controlled Wetting of Superhydrophobic Surfaces

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List of Supporting Figures

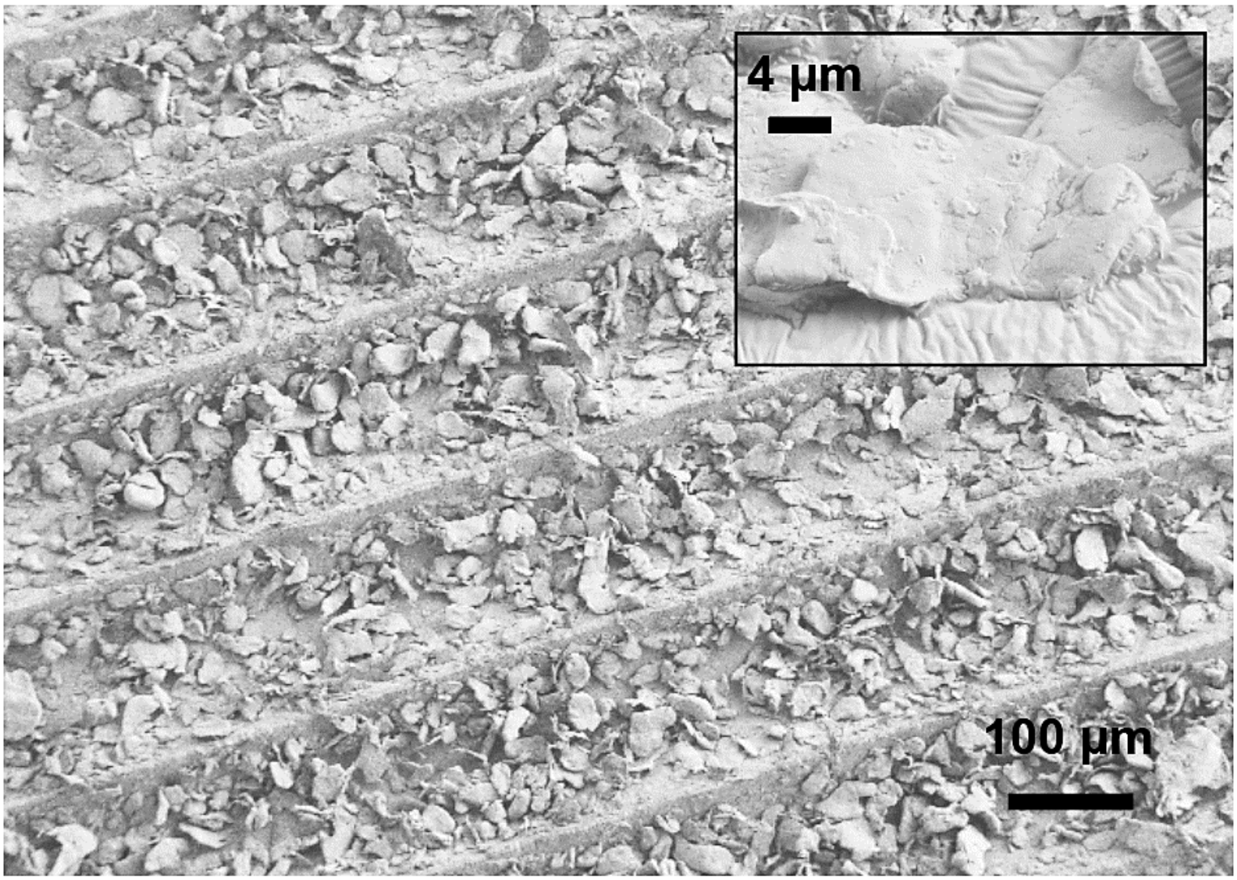

Figure S1. SEM image showcasing PTFE particles on the surface of 160 µm features of a silicone mold. The inset depicts the embedded nature of the particles in direct contact with the soft silicone substrate.

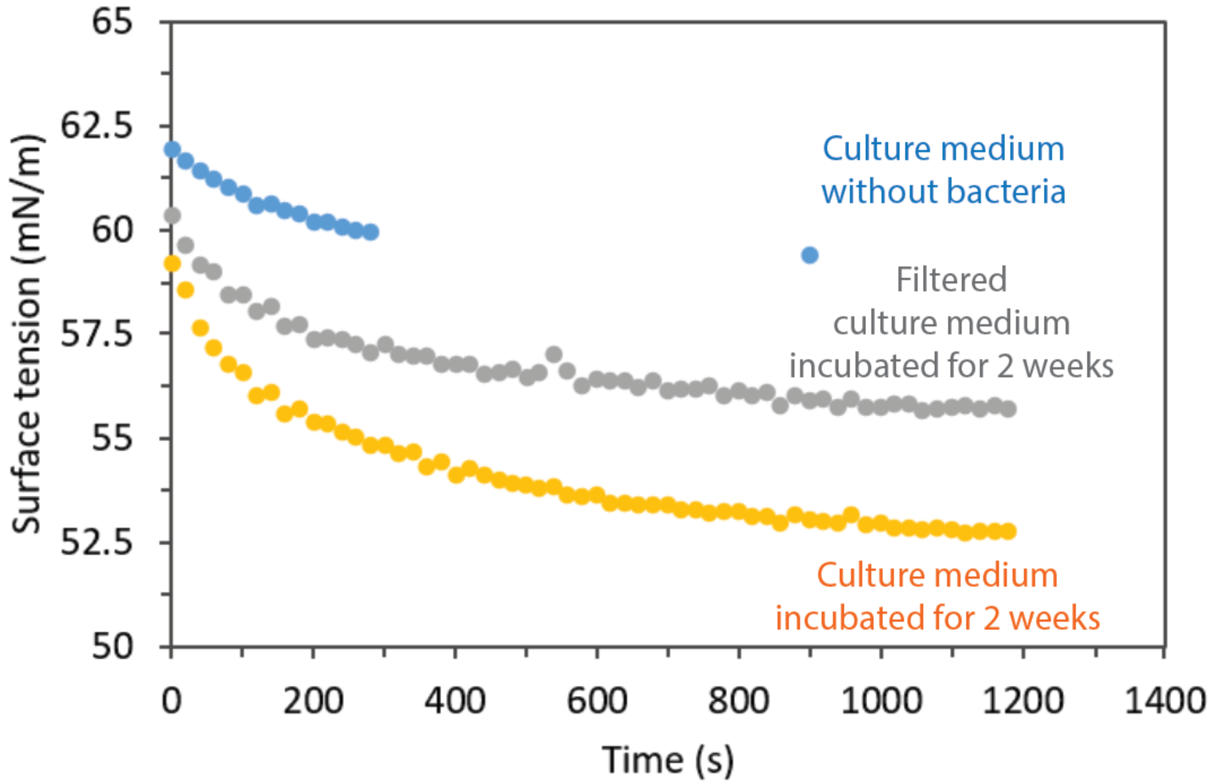

Figure S2. Surface tension of a pristine culture medium (without bacteria), a culture medium containing bacteria and cultivated for *ca.* two weeks, and the same couple of weeks-old culture medium after removing the bacteria by using a 200 nm filter.

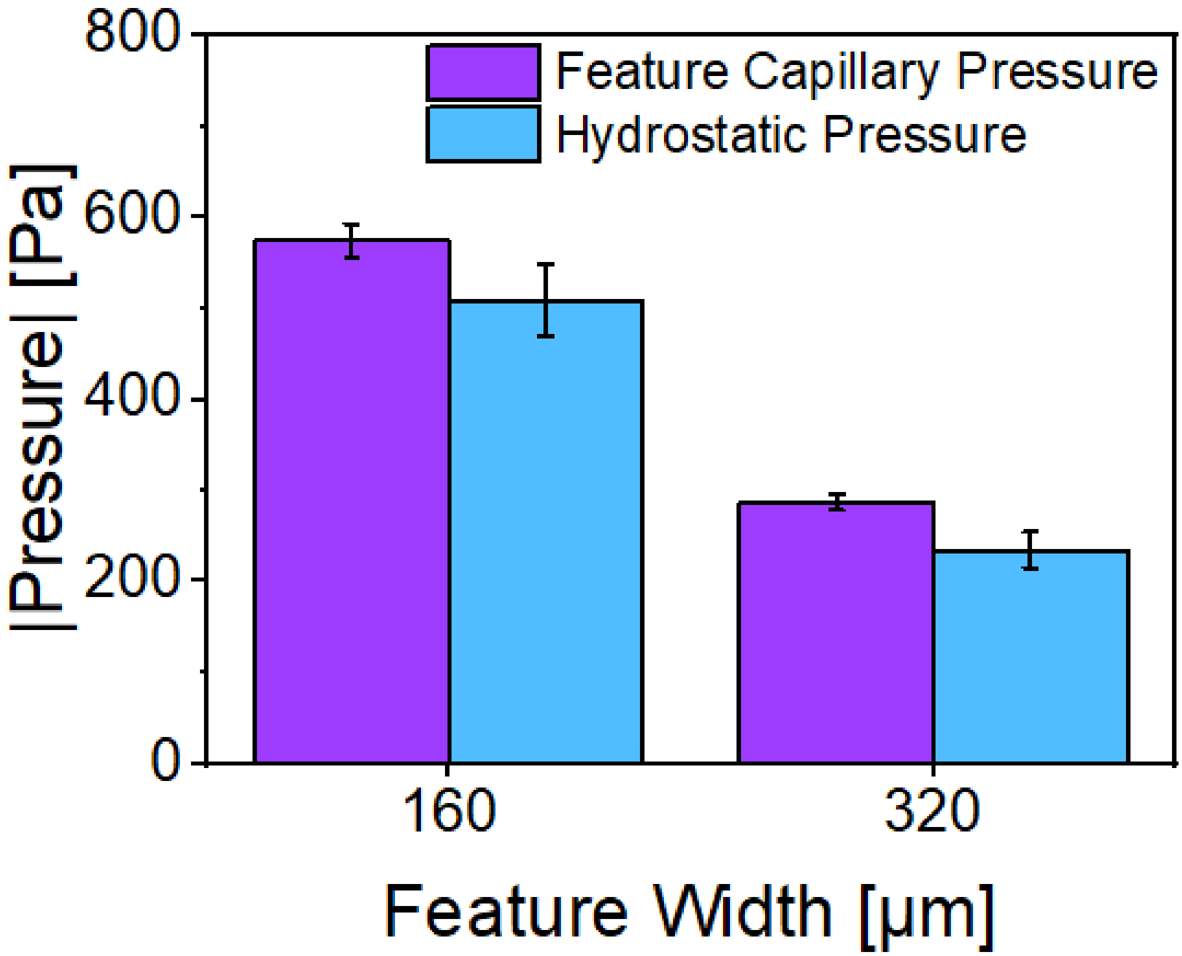

Figure S3. Module of the capillary pressures and threshold hydrostatic pressures as a function of the feature size. The capillary pressures were calculated based on the measured (**Figure S2**) surface tension of the culture medium (purple), on the contact angle of the culture medium on the superhydrophobized surface (151 ± 4 °), and on the width of the feature. The hydrostatic pressure (blue) was calculated based on the observed depth at which the fidelity of replication of the biofilm was maximum.

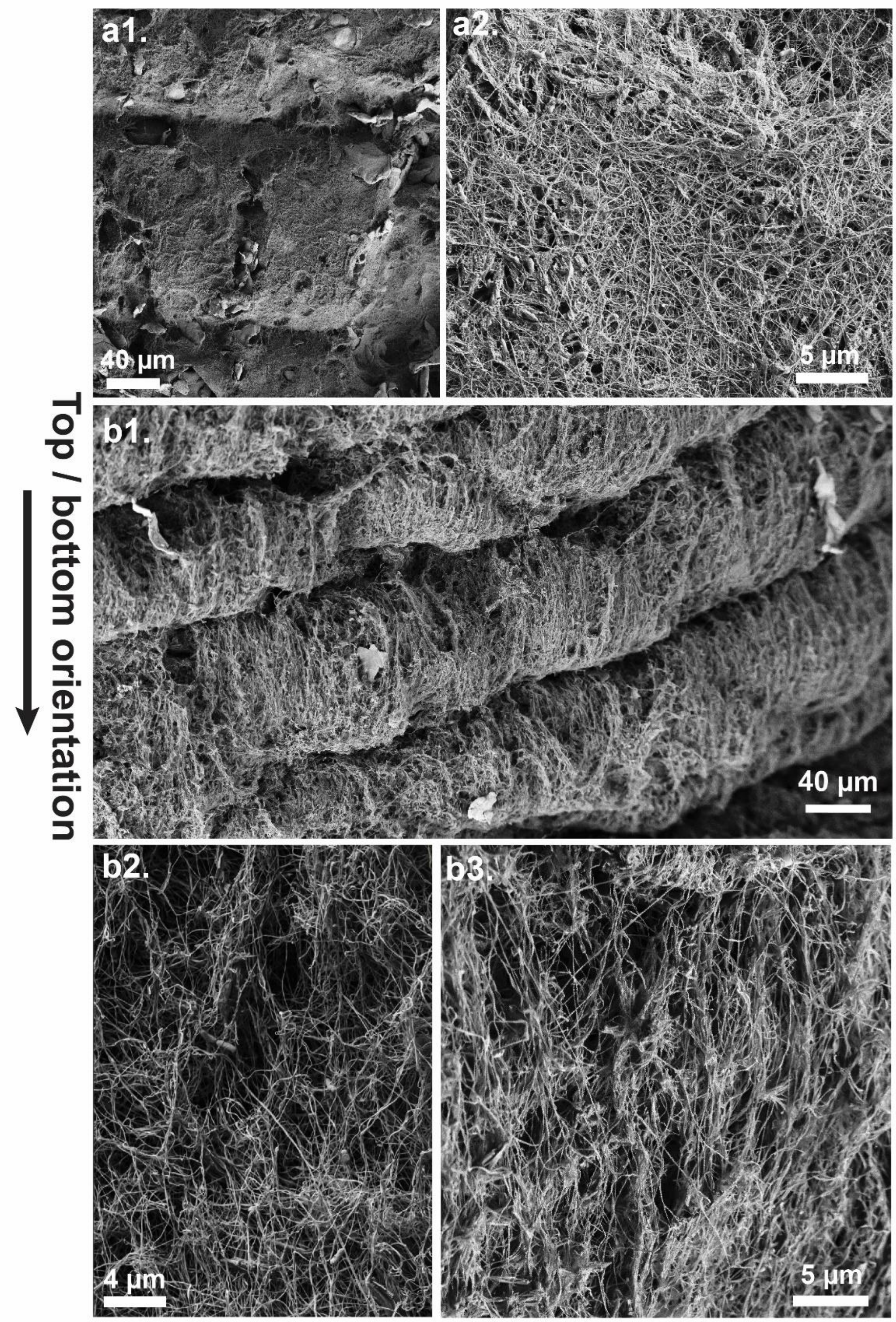

Figure S4. SEM of BNC objects highlighting fiber alignment. The a) topmost section is mostly dominated by random fiber orientation, while aligned fibrils are mostly observed at the b) bottom sections.

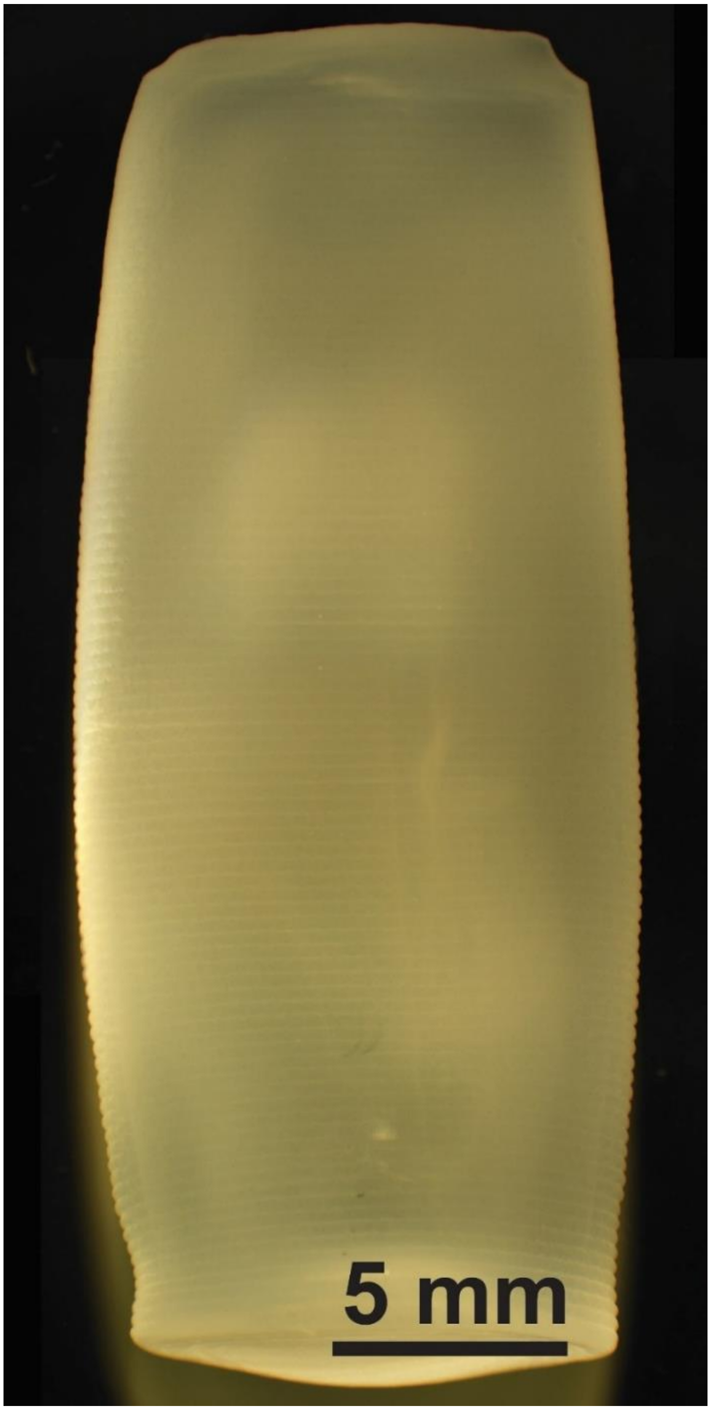

Figure S5. Cylindrical object with surface features of 320 μm biofabricated in a superhydrophobized mold. The object is resting on a Petri dish and immersed in water. The slightly oblate shape was caused by the partial loss of liquid as the water was maintained roughly at the same level of the diameter of the object to facilitate the imaging of the whole sample.

Figure S6. Biofabricated BC object using an open superhydrophobized silicone mold. The hydrostatic pressure was insufficient for the wetting of the smallest features of the mold by the culture medium.

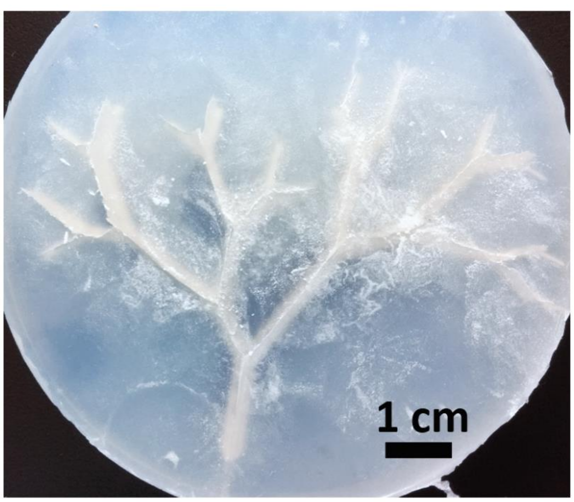

Figure S7. Closed superhydrophobized silicone mold used for the biofabrication of the fractal vascular network.

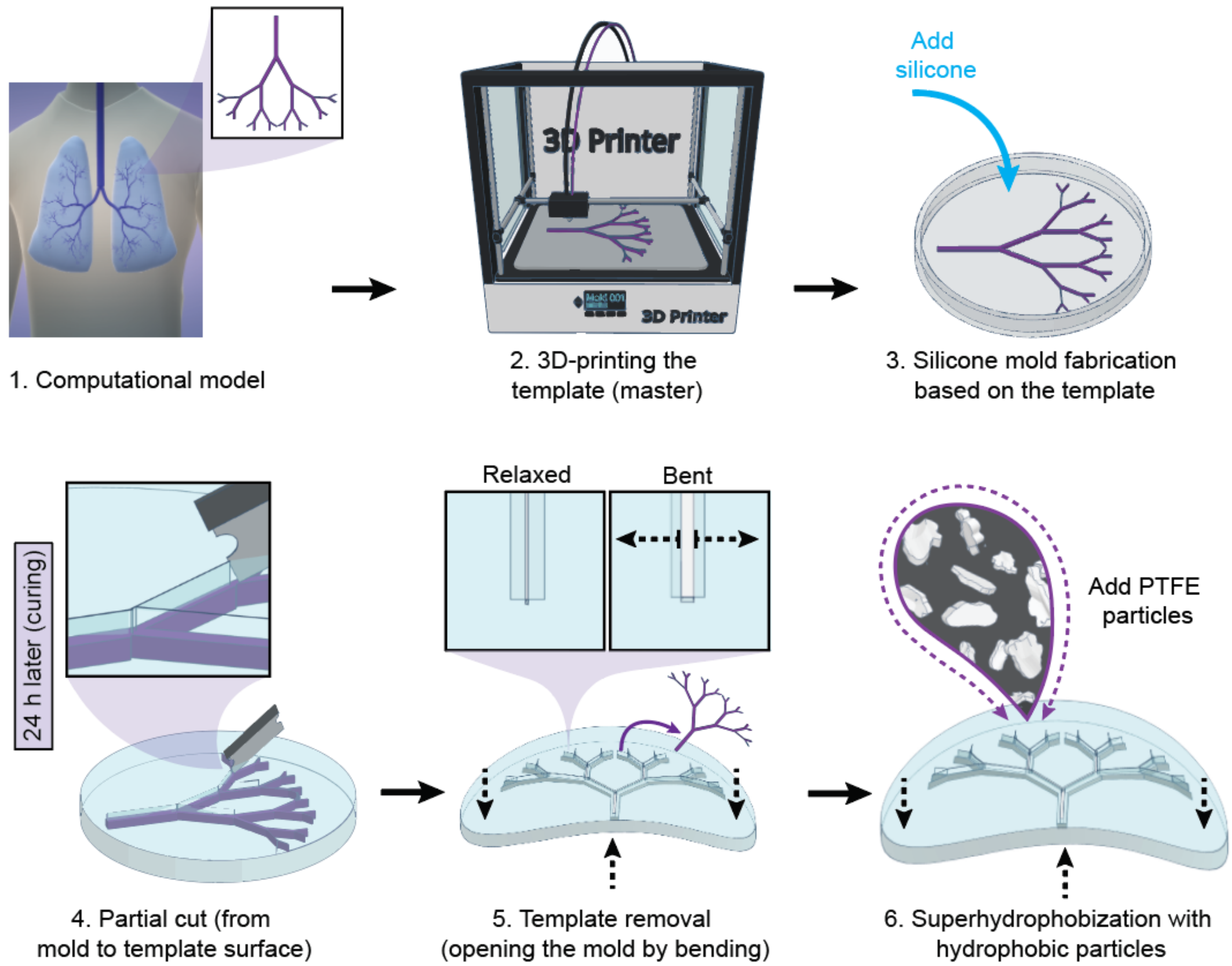

Figure S8. Step-by-step mold manufacturing method where (1) a computational model is first (2) 3D-printed and then (3) used as the master for producing the negative silicone mold. The silicone mold is (4) partially cut for the subsequent (5) removal of the master. By manually bending the mold, stress is generated on the top half of the silicone, consequently opening the cut and giving access to the cavity that is further (6) superhydrophobized for being used for biofabrication. Upon removal of the load, the mold comes back to its flat shape with a closed cut. Note that the same manual bending action was used for carefully removing the BNC object from the mold. A smooth metallic spatula was used to support the BNC object and assist in its removal from the mold.