

Supporting Information for

3D Printing PDMS Elastomer in a Hydrophilic Support

Bath via Freeform Reversible Embedding

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3D printing, PDMS, FRE printing, freeform fabrication, Carbopol

This document includes:

Figures S1, S2

Captions for Supplemental Movies S1 to S4

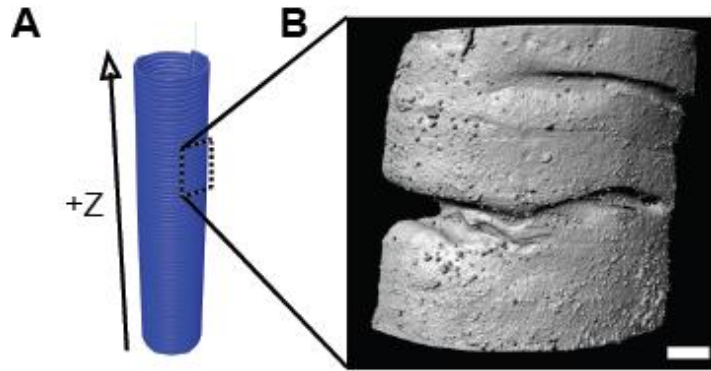


Figure. S1. Visualization of PDMS layers in a FRE printed tube. (A) The G-code used to generate the perfusable PDMS tube shown in Figure 4J. (B) 3D visualization of the fused layers based on confocal imaging. A relatively large surface defect is shown to illustrate that there are regions with fusion that are less than ideal. Scale bar is 500 μm .

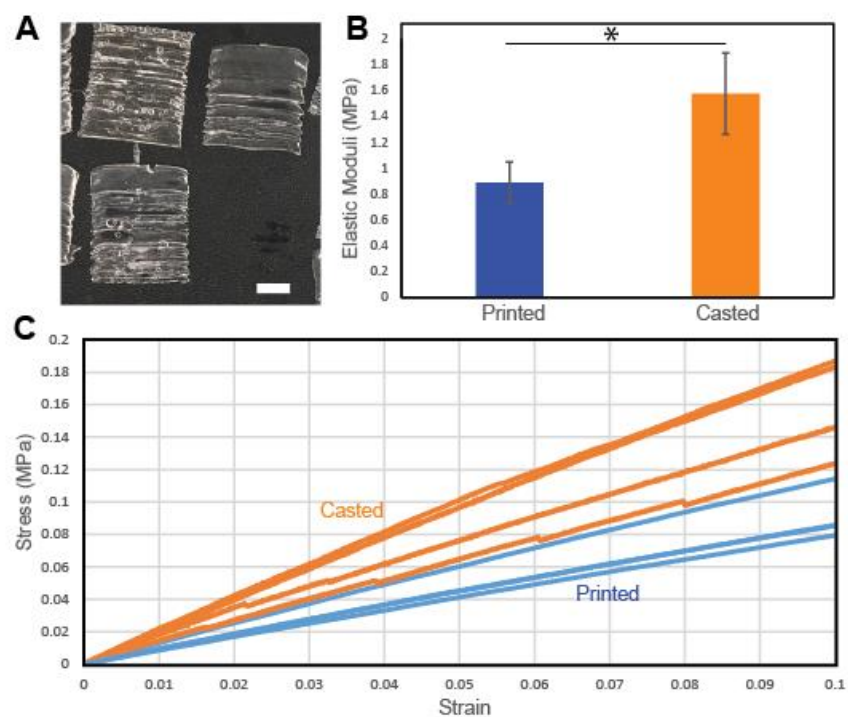


Figure. S2. Mechanical characterization of FRE printed PDMS sheets. (A) Side view of a vertically printed PDMS sheet for mechanical testing purposes. Scale bar is 1 cm. (B) Elastic modulus of FRE printed and cast PDMS test specimens. Note that the lower elastic modulus for the FRE printed PDMS is thought to be due primarily to error in measuring the cross-sectional area of the test specimens. The * symbol indicates $P < 0.05$ based on a t -test. (C) Stress versus strain curves of printed and cast PDMS specimens, showing the linear response up to 10% strain, used for calculating elastic modulus.

Supplemental Movie Captions:

Movie. S1. FRE printing of a PDMS tube. A 2 cm diameter by 1 cm tall tube is FRE printed in PDMS (dyed black for visualization) within a Carbopol support bath. Speed is 5x real time.

Movie. S2. Release of FRE print from Carbopol support bath. A FRE printed PDMS tube 2 cm in diameter by 1 cm tall is released from the Carbopol support by placing the printing container within a larger container containing a stirred PBS solution. The PBS decreases the Carbopol yield stress and viscosity, which facilitates release of the FRE printed PDMS tube. Speed is 60x real time.

Movie. S3. Perfusion of FRE printed PDMS tube. Black dye is perfused via syringe into the base of a hollow and manifold FRE printed PDMS tube.

Movie. S4. Perfusion of a FRE printed PDMS bifurcation. Black dye is perfused via syringe into the base of a hollow bifurcation to split the fluid flow.