

**Integrating Microchannels and Flows into 3D Printable Granular Hydrogel Matrices**

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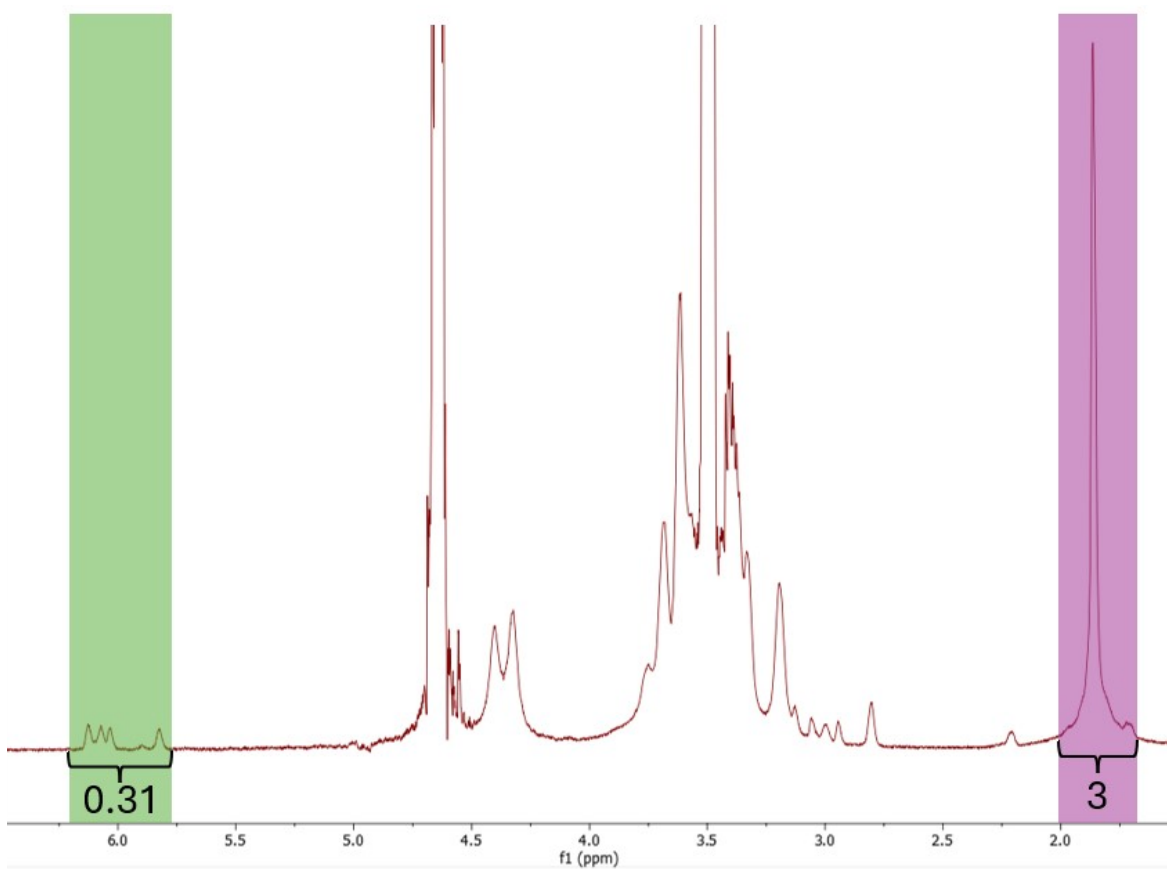
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**Supplemental Material**

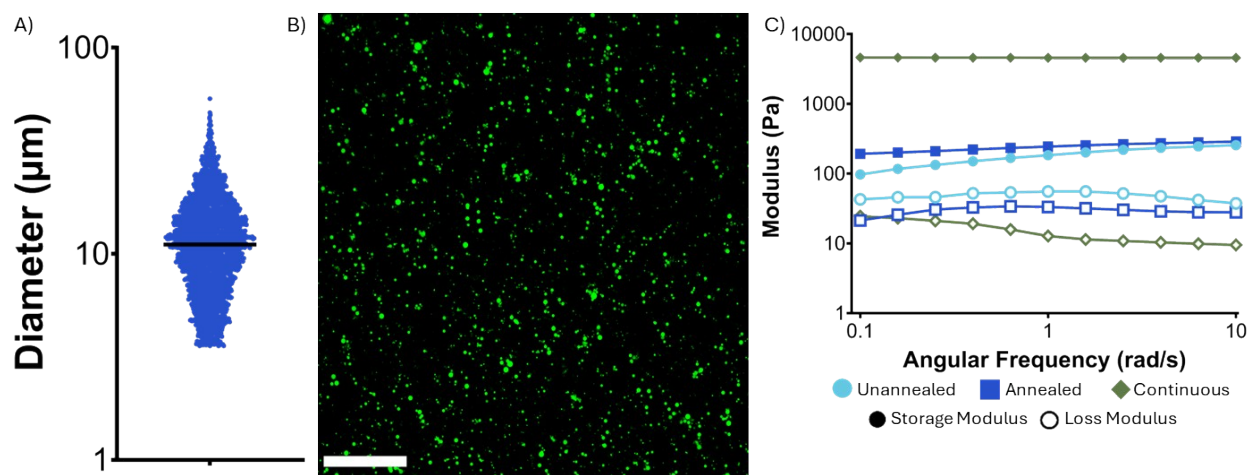
## Example G-code

### Voxels

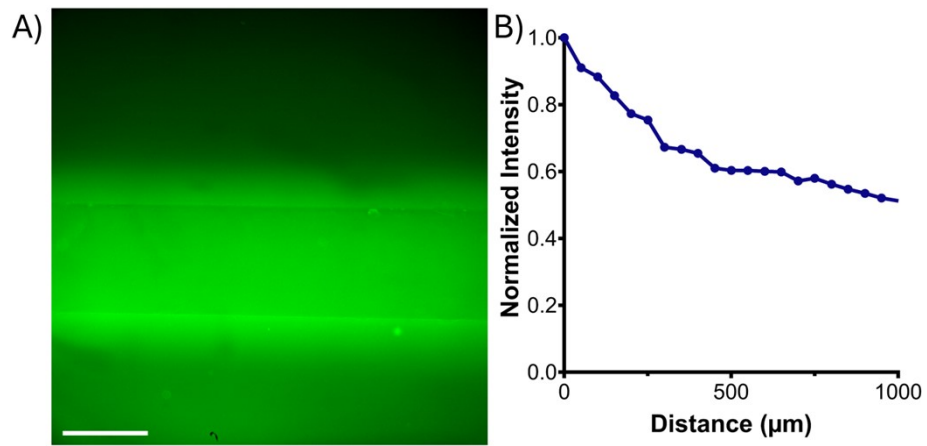
```
G91 ; Relative positioning  
M83 ; Relative extrusion  
G92 X0 Y0 Z0 E0 ; Zero everything  
G1 E0.2 F6 ;  
G1 Z5 F60 ; Lift 5 mm  
G1 X3 F60 ; Move right 3 mm  
G1 Z-5 F60 ; Lower 5 mm  
G1 E0.2 F6 ;  
G1 Z5 F50 ; raise the needle
```



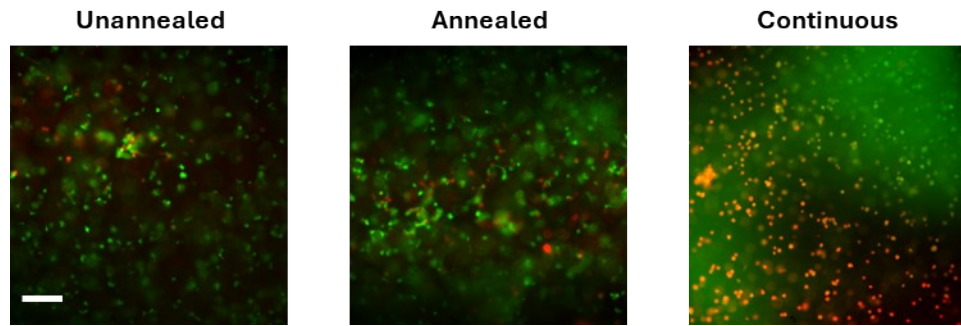
**Figure S1.** Norbornene-functionalized hyaluronic acid (NorHA)  $^1\text{H}$  NMR spectrum. The resultant NMR spectrum above illustrates a modification of 15.5%.



**Figure S2.** A) Size distribution and B) representative image of PEG-Nb hydrogel microparticles (scale bar 500 $\mu$ m). C) Frequency sweep of NorHA granular hydrogel unannealed (light blue), granular hydrogel annealed (dark blue), and continuous hydrogel (green).



**Figure S3.** A) Representative images of FITC-albumin diffusing into the continuous hydrogel from the channel at 24 h, and B) normalized intensity profiles of the fluorescent signal that were then used to calculate the diffusion coefficients (scale bar 500  $\mu\text{m}$ ).



**Figure S4.** Images of HUVEC that were live (green)/dead (red) stained within the device that were used to identify individual cells for quantification(scale bar 200 $\mu$ m) .