An Exciting New 3D Material

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Microelectronics-Photonics

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Background/Relevance

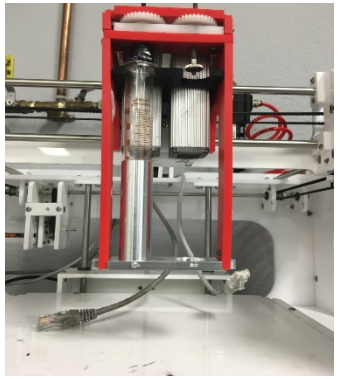
- ClearBallistics gel has been shown to have many flesh like properties, and the potential of this material as a flesh surrogate is high
- If this can be 3D printed with accuracy, medical application could be in work, with 3D printing of this gel a cheaper alternative to molding parts

Innovation

- Find out printing parameters necessary to successfully print a cube, printing a cube shows mastery of x,y,z plane, could possibly print into exotic shapes
- See if there is a way to print with uniform density and consistency

Approach

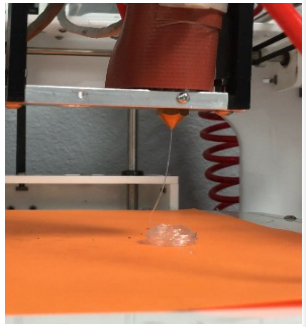
- Create Printhead model that can connect to Fab@home 3D printer.
- Write G-Code for new printhead and material to optimize printed product.
- Tensile test on ClearBallistics gel after printing to understand properties of printed gel.
- After parameters are set, see if process could be made continuous.
- Using similar proccess that the previous group to print the gel.



Setup of Printhead

Key Results

- Proved that Indirect heat transfer can be used to heat up semi-solid materials through dispensing medium for 3D printing
- Shown that metal tip can provide consistent heat transfer for constant extrusion
- As of right now, part difficulties are prohibiting results



Conclusions

- Having a heated bed could be the difference between creating inconsistent prints and solid prints, so a heat bed is being built for the 3D printer
- Idea of extrusion from metal tip is a success

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