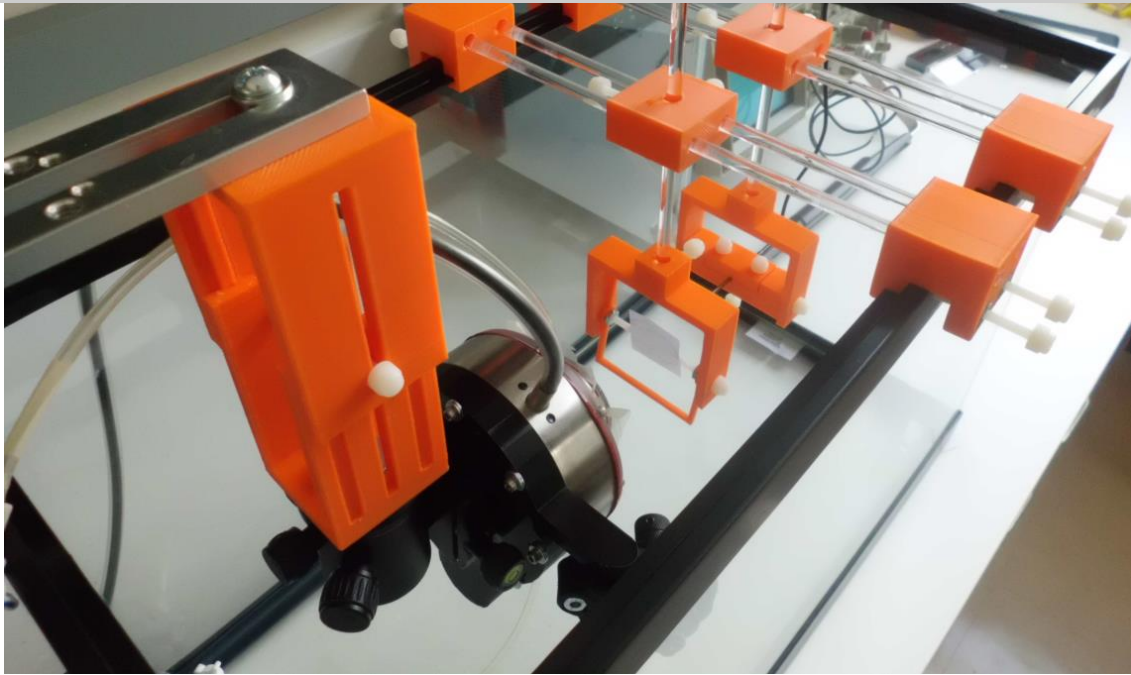


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Makers @ HS/HSL: Custom Research Gear

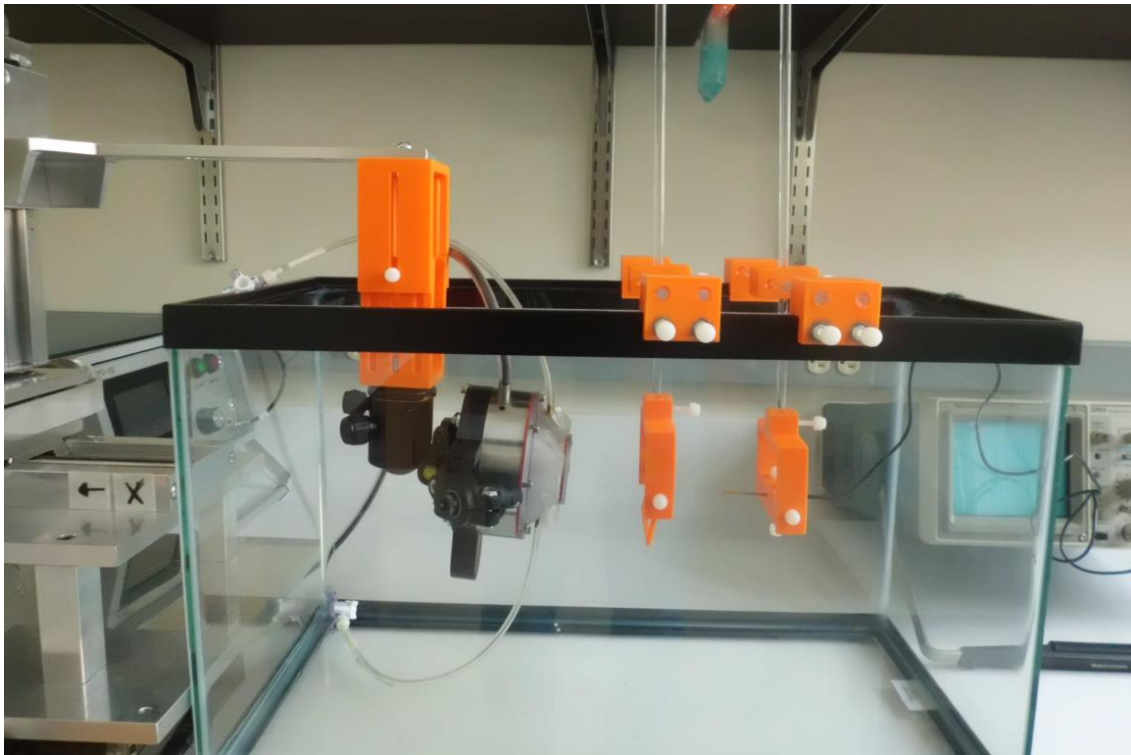
User:	Ali Mohammadabadi
Affiliation:	Department of Diagnostic Radiology and Nuclear Medicine, University of Maryland School of Medicine
Project:	3D printing custom hardware to support a research instrument
Used:	Lulzbot Taz5

Ali Mohammadabadi used the HS/HSL Innovation Space to 3D print several pieces of hardware he designed for [Dr. Victor Frenkel's therapeutic ultrasound research](#). Dr. Frenkel, Director of Translational Focused Ultrasound Research Group, is developing the use of focused ultrasound for a variety of noninvasive procedures, including improving drug and gene delivery to treat invasive brain tumors, and neuromodulation for the treatment of various brain disorders.

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The focused ultrasound transducer set up. All of the orange pieces were designed by Mohammadabadi and printed at the HS/HSL Innovation Space.

Ali's designs will be used for holding a focused ultrasound transducer, a hydrophone, and various tissues between them. The entire setup will allow Dr. Frenkel's lab to determine just how much ultrasound energy is being attenuated by the tissues. Such measurements are required to more accurately plan treatments for using noninvasive focused ultrasound.



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Ali learned about the HS/HSL Innovation Space from a former technician in Dr. Frenkel's lab. "I am completely satisfied with the quality, accuracy and reliability of the library's 3D printed parts", he reported. "I designed and printed several custom parts that cannot be manufactured easily using more traditional methods. It would also be prohibitively expensive if we had these parts made for us using a standard machine shop."

Ali is a graduate research assistant at UMB under Dr. Frenkel, and a PhD candidate in the [Department of Mechanical Engineering at the University of Maryland, Baltimore County](#). He designs 3D models using [Solidworks](#), and enjoys helping others learn computer aided design.



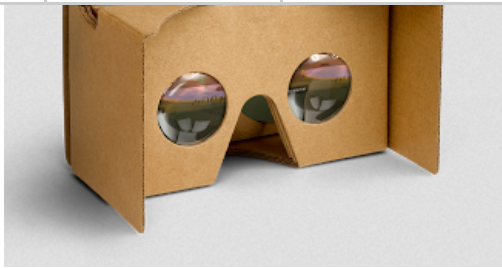
Ali Mohammadabadi, MS

3D Tech in the News and Literature

1. [3D Printers Are Revolutionizing Medicine](#) (aamc.org)
2. [3D Printed Kidney Helps Researchers Prove Riding a Roller Coaster May Help Pass Small Kidney Stones](#) (3dprint.com)
3. [First-ever 3-D printed robots made of both solids and liquids](#) (qz.com)

Did You Know?

The Innovation Space now has a fleet of Google Cardboard virtual reality viewers. See [our usage guide](#) and stop by to try them out!

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Upcoming HS/HSL Innovation Space Workshops

Introduction to 3D Printing

- November 1, 2016
- November 10, 2016
- November 14, 2016

Introduction to 3D Modeling

- November 7, 2016
- December 1, 2016
- December 7, 2016

[Register for our free workshops](#)

New to the HS/HSL Innovation Space?

The Innovation Space is designed for innovative and collaborative hands-on learning experiences. It offers three 3D printers, two 3D scanners, over 3,500 video tutorials from [Lynda.com](#) (available on-site only), a plotter for [poster printing](#), Google Cardboard viewers, a large DNA model, two molecule kits, a button maker, and a 3D printing pen. The staff provides orientations as well as workshops on a regular basis for those who are new to 3D printing and 3D scanning.

For more information, visit our webpage at <http://www.hshsl.umaryland.edu/services/inspace/>.



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