

Josué “Josh” Goss

Innovative problem solver with experience as an inventor, scientist, and engineer.
Josh specializes in building devices for the medical research community.

Bentonville, AR
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Professional Experience

- 2015 **Harvard University** Cambridge, MA
Center for Nanoscale Systems
Focused Ion Beam Engineer and Imaging Scientist
February to September 2015
- Maintained operational FIB systems with over 90% uptime
 - Provided training and application support for students, researchers, and corporate users
 - Developed SOPs and training plans for safe and optimal use of microscopes, cleanroom facilities, and process equipment
- Supervisor: Prof. David C. Bell, Ph.D.*
- 2008 – 2015 **Harvard University** Cambridge, MA
John A. Paulson School of Engineering and Applied Sciences
Wyss Institute for Biologically Inspired Engineering
Staff Scientist
April 2014 to January 2015
- Designed, built, and maintained scientific instruments for producing nanofibers, stem cell bioreactors, and microfluidic toxicity assays
 - Managed 4 laboratories with process, fabrication, cell culture, and analytical equipment valued at \$6M
 - Instructed researchers on principles of device design using CAD, CAM, rapid prototyping techniques, and cleanroom lithography techniques
 - Communicated scientific progress reports to funding agencies (ie DARPA, US Army, DTRA, NIH, FDA, GSK, Sanofi) via written and oral presentations both at Harvard and at off-site program reviews.
- Researcher*
January 2011 to March 2014
- Designed and built scientific tools such as microfluidic stem cell chips, analytical instruments, and devices that mimic brain trauma
 - Established a rapid prototyping facility for the fabrication of microfluidic devices, bioreactor components, and polymer nanofibers
 - Managed laboratory procurement, created financial expenditure reports, and recommend new capital equipment purchases
- Laboratory Manager*
August 2008 to December 2010

- Managed laboratory procurement, produced financial expenditure reports, and recommend new capital equipment purchases
- Provided logistical support for small animal surgery, cell culture, laboratory inventory management, process training, equipment maintenance, and laboratory safety
- Designed a novel method for producing polymer nanofibers

Supervisor: Prof. Kevin Kit Parker, Ph.D.

2012 – 2015 **Harvard Extension School** Cambridge, MA

Teaching Assistant

ENSC E-156 Microfluidics Apps for Biological Analysis and Discovery

January 2012 to May 2015

- Created lab-based curriculum of microfluidic chip fabrication using cleanroom process technology
- Developed instructional material for CAD-based microfluidic device design using AutoCAD and SolidWorks software
- Graded students on participation and research presentation
- Provided office hours for individual project consulting

Supervisor: Prof. David C. Bell, Ph.D.

ENSC E-155 Fundamentals and Applications of Microfluidics

Spring 2012

- Graded weekly homework, midterm, and final exam
- Provided feedback for students on graded material
- Produced live demonstrations of microfluidic devices to visually illustrate lecture material

Supervisor: Executive Dean Fawwaz Habbal, Ph.D.

2002 – 2008 **U.S. Marine Corps, I CO 3/23 4th MARDIV** Little Rock, AR

Company Intelligence Chief – Al Anbar Province, Iraq

- Managed team of intelligence analysts to provide tactical support of infantry combat operations during OIF II
- Employed biometric technology to assist Iraqi Police ID criminals
- Disseminated sensitive information between Marine units throughout five cities in the Al-Anbar Province

Company Commander: Major John D. Cowart

Infantry Rifleman / Platoon Radio Operator – Al Wasit Province, Iraq

- Provided technical and communication support in an infantry company during combat operations in support of OIF I

Company Commander: Major Mike Harris

2005 – 2006 **Harvard University** Cambridge, MA
School of Engineering and Applied Sciences

Research Experience for Undergraduates (REU) Intern

Summer 2006

- Established a novel primary neuronal cell isolation technique
- Designed an optimized printed protein pattern for axonal guiding
- Performed experiments on *in Vitro* neural models of brain injury

Summer 2005

- Fabricated *in Vitro* cardiac tissues using soft lithography molding
- Performed data collection and analysis on *in Vitro* cardiac cells

Supervisor: Prof. Kevin Kit Parker, Ph.D.

Education

2010 – 2015	Harvard Extension School Completed ten graduate-level courses focusing in nanotechnology	Cambridge, MA
July 2008	Harding University <i>Bachelor of Arts in General Studies</i> Emphasis in Biochemistry and Biblical Studies	Searcy, AR

Professional Honors and Certificates

March 2014	SolidWorks Certified Professional Certified SolidWorks Professional – Mechanical Design	Cambridge, MA
March 2012	Dean's Excellence Award Harvard University School of Engineering and Applied Sciences	Cambridge, MA
January 2011	Safe Use of Machine Tools Certification Harvard University SEAS/Physics Machine Shop	Cambridge, MA

Technical and Research Skills

Microfabrication

- **Additive & Subtractive Machining:** Focused Ion Beam milling, UV-CO2 laser milling, laser welding, multi-axis micromachining, and 3D printing
- **Imprinting Techniques:** Compression molding, Micro-molding, Hot Embossing, Nano Imprint Lithography (NIL), Soft Lithography

Microscopy

- **Electron:** Scanning Electron Microscopy, Focused Ion Beam imaging
- **Optical:** Confocal, Epifluorescent, and Phase Contrast Microscopy

Nanotechnology

- 10 years of cleanroom experience: photolithography, reactive ion and wet etching, thermal deposition, sputter coating, chemical vapor deposition
- Novel techniques in protein and polymer nanofiber assembly

Laboratory Skills

- Cardiac, neuron, and skeletal muscle primary cell isolation
- Microfluidic chip design and fabrication
- Scientific instrument development

Computer Software

- *CAD/CAM*: SolidWorks, AutoCAD, LinkCAD, MasterCAM, HSMWorks
- *Data acquisition & analysis*: Matlab, LabView, Tableau, ImageJ, Systat

Language Proficiency

- Fluent in English & Spanish
- *Programming Languages*: HTML5, CSS, Arduino, Python

Selected Publications

- Agarwal A, Goss JA, Cho A, McCain ML and Parker KK. **Microfluidic heart on a chip for higher throughput pharmacological studies**. *Lab on a Chip*. 2013; 13(18): 3599–608.
- Grosberg A, Nesmith AP, Goss JA, Brigham MD, McCain ML, Parker KK. **Muscle on a chip: In Vitro contractility assays for smooth and striated muscle**. *J Pharmacol Toxicol Methods*. 2012;65:126-135.
- Hemphill MA, Dabiri BE, Gabriele S, Kerscher L, Franck C, Goss JA, Alford PW, Parker KK. **A possible role for integrin signaling in diffuse axonal injury**. *PLoS ONE*. 2011;6:e22899.
- Alford PW, Dabiri BE, Goss JA, Hemphill MA, Brigham MD, Parker KK. **Blast-induced phenotypic switching in cerebral vasospasm**. *PNAS*. 2011;108:12705-12710.
- Badrossamay MR, McIlwee HA, Goss JA, Parker KK. **Nanofiber assembly by rotary jet spinning**. *Nano Letters*. 2010;10:2257-2261.

Selected Patents

- Goss, Josué; Nawroth, Janna; Park, Sung Jin; Capulli, Andrew; Golecki, Holly; Parker, Kevin Kit; Dabiri, John. **Tissue-Engineered Pumps and Valves and Uses Thereof**. PCT Application WO2014015251A3. US Application US20150182679A1. Filed July 19, 2013.
- Goss, Josué; Gonzalez, Grant; Golecki, Holly; Shin, Kwanwoo; Parker, Kevin Kit. **Immersed Rotary Jet Spinning Devices (iRJS) and Uses Thereof**. 2013. PCT Application WO2014127099A3. US Application US20150354094A1. Filed February 13, 2013.
- Goss, Josué; Grosberg, Anna; Agarwal, Ashutosh; McCain, Megan; Alford, Patrick; Feinberg, Adam; Parker, Kevin Kit. **Muscle Chips and Methods of Use Thereof**. PCT Application WO2013086512A9. U.S. Application US20140342394A1. Filed December 10, 2012.
- Goss, Josué; Badrossamay, Mohammed; Parker, Kevin Kit. **Methods and Devices for the Fabrication of 3D Polymeric Fibers**. PCT Application WO2010132636A1. U.S. Application US20120135448A1. Filed May 13, 2010.
- Goss, Josué; Grosberg, Anna; Brigham, Mark; Alford, Patrick; Feinberg, Adam; Parker, Kevin Kit. **Devices Comprising Muscle Thin Films and Uses Thereof in High Throughput Assays for Determining Contractile Function**. PCT Application WO2010127280A1. U.S. Application US20120142556A1. U.S. Patent 9012172 B2. Filed April 30, 2010.