George **Sun**

Startup Founder & PhD, Biological Engineering

New Lab, 19 Morris Ave. Bldg. 128, Brooklyn, NY, 11205

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Education

Ph.D. Biological Engineering — *Cambridge, MA*

Massachusetts Institute of Technology, GPA 4.90/5.00 — *Aug 2014 - June 2019*

B.S. Biological Engineering and **Electrical Engineering & Computer Science** — *Berkeley, CA*

University of California Berkeley, GPA 3.96/4.00 — *Aug 2010 - 2014*

Work Experience

Nextiles, Inc. — *Brooklyn, NY*

CEO — *Jan. 2020 - Present*

- Secured >$100K on non-dilutive grants, raising a pre-seed round, and established a hardware manufacturing space in Brookyln, NYC.
- Collaborated with several industries in the textile, sports apparel, and medical technologies sectors.
- Led the business strategy and oversaw financials to guide the company into a sustainable and profitable trajectory.

Co-Founder & CTO — *June 2019 - Dec 2019*

- Tasked with developing new wearable technologies based on fabric-based sensors. Sensors are built to measure force directly from compression/bending of threads.
- Patented 3 unique inventions on the design, manufacturability, and application of fabric-based sensors, all approved by the USPTO.
- Completed programs such as MIT Delta V accelerator, Hubweek Demo Day, NSF I-Corps, and several other pitch and showcase events.

Founder — *April 2018 - May 2019*

- Founded Nextiles, a startup built on re-thinking wearable technologies through advanced sewing technologies.
- Inspired from past work in electrical engineering and material science, and motivated to merge the two together in unique ways in fabric.

Design Lab *X* Puma — *Cambridge & Nuremberg*

Lead Embedded Engineer — *Jan. 2017 - Jan. 2018*

- Led a team of engineers and designers with Puma's Innovation Team to redesign and instrument their line of athletic shoes
- Focused on embedding force-sensitive materials into the shoe to track gait and power using machine models.

Communication Lab, MIT — *Cambridge, MA*

Communication Fellow & Instructor — *Jun. 2015 - May. 2019*

- Facilitated workshops and seminars on effective communication and scientific presentation.
- Worked with MIT's *GEL* program and helped teach *Leading Creative Teams* while developing course content for MIT.

Research Experience

Biomolecular Materials Group, MIT — *Cambridge, MA*

PhD, Graduate Researcher – Belcher Lab — *Sept. 2014 - June. 2019*

- Engineered yeast as a bioremediation agent to consume and recycle heavy metals, particularly from electronics and mining runoff.
- Authored and co-authored several research articles in Nature, with several utility patents emerging from this unique invention.
- Utilized laboratory techniques ranging from material science (ICP, EDX, XRD), molecular biology (PCR, genetic circuits, transformations), chemistry (chromatography, electrochemistry), and analytical tools (matplotlib, scikit-learn, tidyverse).
- Awarded several grants (NSF, Bose, CEHS) and honors for scientific talks and presentations on environmental remediation technologies.

Molecular Engineering Imaging and Control Group, Berkeley & Caltech — *Berkeley & Pasadena, CA*

Research Assistant – Shapiro Lab — *Jan. 2011 - Aug. 2014*

- Conducted research in biomolecular tools such as stem cell therapy and biological contrast agents for medical imaging.
- Independently researched the effects of metallo-enzymes on enhancing the magnetic properties of neurological systems for NMR and MRI.
- Transitioned to Caltech's Chemical Engineering department in the last year of college to finalize research.

Microfluidics for Point-of-Care Diagnostics Group, Columbia — *New York, NY*

Amgen Research Scholar – Sia Lab — *June 2013 - September 2013*

- Created new experimental protocols to create PDMS scaffolds for organoid growth.
- Focused on recreating synthetic extracellular matrixes and vasculature for brown fat and hair follicle growth.

Publications

Academic Journals

Sun, George L., and Angela M. Belcher. "Engineering supramolecular forming proteins to chelate heavy metals for waste water remediation." (2020). *in submission*.

Sun, George L., Erin E. Reynolds, and Angela M. Belcher. "Using yeast to sustainably remediate and extract heavy metals from waste waters." *Nature Sustainability* (2020): 1-9.

Gilbert, C., Tang, T. C., Ott, W., Dorr, B. A., Shaw, W. M., **Sun, G. L.**, ... & Ellis, T. "Living materials with programmable functionalities grown from engineered microbial co-cultures." *bioRxiv*. (2019).

Sun, George L., Erin E. Reynolds, and Angela M. Belcher. "Designing yeast as plant-like hyperaccumulators for heavy metals." *Nature communications* 10.1 (2019): 1-12.

Shapiro, M. G., Ramirez, R. M., Sperling, L. J., **Sun, G.**, Sun, J., Pines, A., ... & Bajaj, V. S. (2014). "Genetically encoded reporters for hyperpolarized xenon magnetic resonance imaging." *Nature chemistry* 6.7 (2014): 629.

Web Publications

Sun, George L.. "File Structure". *Mechanical Engineering Communication Lab, MIT*. (2019). `https://mitcommlab.mit.edu/meche/commkit/file-structure/`.

McLean, K., Peters J., Ramamoorthy, D., **Sun, G.**, Toth T., Triassi A., Prerna B. "Awesome BECL Resources". *Biological Engineering Communication Lab, MIT*. (2019). `https://github.com/MIT-BECL/awesome-becl-resources`.

Sun, G., Wang, D., Gerarld, K. "Air Guitar". *Instructables*. (2016). `https://www.instructables.com/id/Air-Guitar/`.

Patents

Sun, George L.. "Devices for static and dynamic body measurements." US Patent 10,605,680. 31 March 2020.

Sun, George L.. "Methods of manufacturing devices for static and dynamic body measurements." US Patent 10,458,866. 29 October 2019.

Sun, George L.. "Systems, methods, and devices for static and dynamic body measurements." US Patent 10,378,975. 13 August 2019.

Sun, George L., and Angela M. Belcher. "Engineered yeast as a method for bioremediation." U.S. Patent 15/887,305. 18 August 2018

Honors & Awards

2019-*Curr*	**Member,**	New Lab – Brooklyn Navy Yard	*New York, NY*
2019	**Member,**	Delta V Accelerator	*New York, NY*
2019	**Member,**	NSF I-Corps Program	*Philadelphia, PA*
2018-2019	**Recipient,**	CEHS Pilot Grant	*Cambridge, MA*
2016-2019	**Recipient,**	Amar G. Bose Research Grant	*Cambridge, MA*
2014-2019	**Recipient,**	NSF Graduate Research Fellowship Program	*Cambridge, MA*
2011-2014	**Recipient,**	IMSD NIH Research Fellow	*Berkeley, CA*
2010-2014	**Recipient,**	Regent & Chancellor Scholarship	*Berkeley, CA*

Skills

Machinery	Solder/Reflow, 2-3DoF CNC, Vinyl Cutters, Laser Cutters, 3D Printing, Molding/Casting, Screen Printing, Vacuum Forming
Digital Fabrication	Eagle PCB, Fusion CAD/CAM, Techpacker, Multimeter/Oscilloscope, TTL/UART/I^2C/ISP Communication
DevOps	Microsoft Suite, GSuite, Airtable, Coda, Slack, Asana, Docsend, Git/hub/lab, GoDaddy, Webflow, Heroku
Programming	Javascript (Node.js), Python (Matplotlib, Numpy, Scipy, Pandas, Scikit-learn, Notebooks), R (Tidyverse, Notebooks), C (AVR firmware), UNIX (awk, grep, sed), GO, LaTeX
Back-end	Express, MongoDB, Mlab, AWS, Websockets, BLE Stack, REST, CRUD
Front-end	D3.js, Three.js, Leaflet.js, Gulp, Yeoman, HTML5, Bootstrap, SCSS, Jekyll