

George Sun

STARTUP FOUNDER & PHD, BIOLOGICAL ENGINEERING

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

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Work Experience

Nextiles, Inc.

Brooklyn, NY

CEO Jan. 2020 - Present

- Secured >\$1M on non-dilutive grants, pre-seed round, and established a hardware manufacturing space in Brooklyn, 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.

Puma X Design Lab

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

Jan. 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.

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

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

Pandit, Shalmalee, **Sun, George L.**, and Angela M. Belcher. "Yeast Platform Technology for Sustainable Production of Industrial Molecules." (2020). *in submission*.

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://mitcommmlab.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. "Connectors for integrating conductive threads to non-compatible electromechanical devices." US Patent 17,559,815 (in-review). 22 December 2022.

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

2021-Curr Member , Council of Fashion Designers of America	New York, NY
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 ² C/ISP Communication
Administration	Microsoft Suite, GSuite, Airtable, Coda, Slack, Asana, Docsend, Git/hub/lab, GoDaddy, Webflow, Heroku
Programming	AndroidOS (Java), iOS (Swift), Javascript (Node.js), Python (Matplotlib, Numpy, Scipy, Pandas, Scikit-learn, Notebooks), C (AVR firmware), UNIX (bash, awk, grep, sed), GO, LaTeX
DevOps	AWS (EC2, S3, Lambdas, Kinesis, Cognito), GCP (Firebase, Firestore, Authentication), MongoDB Atlas
Back-end	Express, MongoDB, Websockets, BLE Stack, REST, CRUD
Front-end	D3.js, Three.js, Leaflet.js, Gulp, Yeoman, HTML5, JQuery, Bootstrap, SCSS, Jekyll