

# Bettina K. Arkhurst

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Mechanical Engineering Ph.D. Student

Atlanta, GA · Jamesburg, NJ

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## RESEARCH INTERESTS

Designing equitable and sustainable energy technologies

## EDUCATION

**Georgia Institute of Technology**, Atlanta, GA

Aug. 2018 - Present

Pursuing Doctor of Philosophy in Mechanical Engineering

**Massachusetts Institute of Technology**, Cambridge, MA

Sept. 2014 - June 2018

Bachelor of Science in Mechanical Engineering

Chinese Language Concentration

## RESEARCH EXPERIENCE

**Engineering Design Research Lab**, Atlanta, GA

Jan. 2021 - Present

**Georgia Tech**, Dr. Katherine Fu

*Graduate Research Assistant*

- Researching design methodologies for creating equitable technologies particularly for the renewable energy sector

**Scalable Thermal Energy Engineering**, Atlanta, GA

Aug. 2018 - Dec. 2020

**Georgia Tech**, Dr. Shannon Yee

*Graduate Research Assistant*

- Developed an electrothermal immersion probe to be used with the 3-omega technique for measuring thermal properties of fluidized media up to a temperature of 825°C for the U.S. Department of Energy's Generation 3 Concentrating Solar Power (Gen3CSP) Plant
- Generated analysis techniques for analyzing 3-omega data to gather thermal properties from the electrothermal probe

**Microfluidics and Nanofluidics Research Lab**, Cambridge, MA

Sept. 2017 - May 2018

**MIT**, Dr. Rohit Karnik

*Undergraduate Researcher*

- Designed the process and hardware required for a system used to test the efficacy of xylem filters during the manufacturing process
- Began assessing the system's ability to work in a manufacturing plant in rural India

**Synthetic Neurobiology**, Cambridge, MA

Nov. 2014 - March 2017

**MIT**, Dr. Ed Boyden

*Undergraduate Researcher*

- Analyzed the performance of mice in a virtual reality system that was used to record neural activity in vivo to retrieve new data to be included in grants and publications
- Designed a new virtual reality system to better mimic reality for studying the physiological progression of neurological diseases such as Alzheimer's

**The Weiss Lab**, The Bronx, NY

July 2013 - Aug. 2013

**Albert Einstein College of Medicine**, Dr. Louis Weiss

*Research Volunteer*

- Studied *Toxoplasma gondii* host cell invasion and the parasite's ability to exchange surface proteins with the host cell through a process called trophocytosis
- Learned wet lab techniques, microscopy and HFF cell management

## INDUSTRY EXPERIENCE

**International Business Machines (IBM)**, Research Triangle Park, NC **June 2017 - Aug. 2017**  
*Real Estate and Strategy Operations Project Management Intern*

- Led the team's integration of Agile tools from external contractors
- Created graphical user interfaces with VBA for intuitive use of an Excel database for project managers
- Co-chaired the client experience surveillance group

**NeuroVigil LLC**, Moffett Field, CA **Jan. 2017 - Feb. 2017**  
*Biomedical Product Design Intern*

- Used designing software, SOLIDWORKS, to design consumer-driven and functional enclosure for future biomedical device estimated to serve 10,000 people in the first shipment
- Facilitated the creation of three new prototypes of the product in order to determine final product design

**Huawei**, Shenzhen, China **Aug. 2016**  
*Huawei Seeds for the Future Scholar*

- Spent two weeks in China learning about the current technology used by Huawei as well as their research and development for future innovations

## TEACHING & MENTORSHIP

**Massachusetts Institute of Technology**, Cambridge, MA **Sept. 2015 - May 2018**  
*Physics Teaching Assistant*

- Administered weekly recitations and office hours, assisted with grading, and led exam reviews for about 40 students annually in first-year physics courses for classical mechanics students in the Experimental Study Group (ESG)
- Received an average overall rating of 6.75/7.0 for my performance as a teacher assistant

**MIT Office of Engineering Outreach**, Cambridge, MA **July 2016 - Aug. 2016**  
*Residential Advisor & Cluster Leader*

- Served as a mentor, chaperon and guide for underrepresented high school students while they explored engineering at MIT
- Worked with both the Engineering Experience (E2) and MIT Online Science, Technology, and Engineering Community (MOSTEC) programs

**MIT Leadership Training Institute**, Cambridge, MA **Oct. 2014 - Oct. 2015**  
*Project Mentor & Retreat Chair*

- Guided 5 local high school students in initiating their own community service projects
- Organized and executed the retreat for the mentors of the Leadership Training Institute

## LEADERSHIP & SERVICE

**Mechanical Engineering Diversity, Equity & Inclusion Council**, Atlanta, GA **July 2020 - Present**  
*Faculty Subcommittee Council Member*

- Addressing issues of diversity and equity among Woodruff School faculty as well as within the broader Woodruff community

**Mechanical Eng. Graduate Student Mental Health Committee, Atlanta, GA** Jan. 2020 - Present  
*Leading Member*

- Leading a team of mechanical engineering student volunteers to improve the culture around mental health among graduate students in the department
- Developed the team from an ad hoc committee to one carrying out initiatives, meeting with administrators and working on policy proposals

**Fellowship of Christian Graduate Students, Atlanta, GA** Aug. 2020 - Present  
*President*

- Facilitating community through a weekly graduate student Bible study and other events
- Upgraded group's website after 10 years

**Mechanical Engineering Graduate Student Council, Atlanta, GA** Jan. 2020 - Present  
*Council Member*

- Council for discussing grad student issues and develop solutions with heads of the department

**MIT Class, Awareness, Support and Equality, Cambridge, MA** May 2017 – June 2018  
*Head of Food Insecurity Group*

- Collaborated with the MIT Women's League to create and finance a fresh food package program to provide food for students struggling with food insecurity on campus
- Advised representatives from the MIT Division of Student Life as they sought to open a low-cost market on campus
- Started in-dorm food pantries and collaborated with the Undergraduate Association's sustainability team to collect leftover non-perishable foods as students moved out to restock pantries

**MIT MindHandHeart, Cambridge, MA** Sept. 2015 - May 2018  
*Connectedness Working Group Co-chair*  
*Random Acts of Kindness (RAK) Week Founder*

- Worked with members of the community to improve connectedness among students, faculty and faculty in order to improve mental health on the MIT campus
- Pioneered a week-long program to encourage the formation of connections, MIT support resource awareness and random acts of kindness on campus

## CONFERENCE PRESENTATIONS

Poster Competition: Arkhurst, B.K., Electrothermal Immersion Technique for Studying Heat Transfer Media in High-Temperature Corrosive Environments, Georgia Tech Graduate Technical Symposium Poster Competition , Atlanta, GA, Sept. 2019  
*2nd Place Award*

Poster Presentation: Arkhurst, B.K., Brankovic, S., Kommandur, S., Gunawan, A., Yee, S., Electrothermal Immersion Technique for Studying Heat Transfer Media in High-Temperature (up to 1200°C) Corrosive Environments, ASME Summer Heat Transfer/Energy Sustainability Conference , Bellevue, WA, July 2019

Poster Competition: Arkhurst, B.K., Electrothermal Immersion Technique for Studying Heat Transfer Media in High-Temperature (up to 1200°C) Corrosive Environments, Career, Research, and Innovation Development Conference , Atlanta, GA, Feb. 2019  
*Winner of the Provost's Award*

## WORKSHOPS

**Communicating Science (ComSciCon) Atlanta, Athens, GA** March 2020  
*Science Communication Workshop*

## PUBLICATIONS

Arkhurst, B., 2018, "Identification and Evaluation of Techniques for Quality Control of Low-Cost Xylem Filters," B.S. thesis, Mechanical Engineering, Massachusetts Institute of Technology.

*Preparing first author paper on electrothermal probe work*

## HONORS & AWARDS

SLOAN SCHOLAR, ALFRED P. SLOAN FOUNDATION'S MINORITY PH.D. (MPHD) PROGRAM 2020  
*To diversify the U.S. Ph.D. degree-holding workforce by increasing the recruitment, retention, and graduation of underrepresented minority doctoral students in STEM*

GEORGIA TECH FACES OF INCLUSIVE EXCELLENCE 2020  
*To recognize individuals who have distinguished themselves in professional endeavors related to their research, teaching, leadership, and/or public service activities at Georgia Tech*

FELLOW, NATIONAL SCIENCE FOUNDATION GRADUATE RESEARCH FELLOWSHIP PROGRAM 2018  
*To individuals selected early in their graduate careers based on their demonstrated potential for significant research achievements in STEM or in STEM education*

THE PETER AND SHARON FIEKOWSKY AWARD 2018  
*For excellence in teaching at ESG (Experimental Study Group)*

MIT BLACK WOMEN'S ALLIANCE LADY OF SOUL AWARD 2018  
*Exemplified qualities of activism, unity, and friendship for which BWA Stands*

MIT EMERGING LEADER AWARD 2016  
*Made significant contributions to the community and has demonstrated the potential for leadership and continuing service*

MIT BRIDGE BUILDER AWARD 2016  
*For addressing a campus, local community, or global need and/or demonstrating a strong commitment to and passion for diversity education and cultural celebration*

LAYA W. WEISNER AWARD 2016  
*Undergraduate woman who has most enhanced MIT community life*

## SKILLS & HOBBIES

### MAKING

**Machining:** Mill, Lathe, Shop Tools, Waterjet, 3D Printer, Laser Cutter, Welding, Thermoforming

**Cleanroom:** Sputterer, Evaporator, Atomic Layer Deposition

### CHARACTERIZATION

Profilometry, Microscopy (including SEM with EDX/EDS), 3-omega Technique

### SOFTWARE

**Advanced:** SOLIDWORKS, MATLAB, Excel

**Proficient:** Python, HTML/CSS, R

**Beginner:** JavaScript, Swift

### LANGUAGES

**Fluent:** Twi, Fanti (Ghanaian Languages)

**Conversational:** Mandarin, Spanish

### OTHER SKILLS & INTERESTS

• Climate Justice • Science Communication • Mental Health • Trained in QPR • Videography