

# Leah Ginsberg, Ph.D.

Email: [lginsber@kennesaw.edu](mailto:lginsber@kennesaw.edu)

ORCID: 0000-0001-9685-7014

LinkedIn: <https://www.linkedin.com/in/leah-ginsberg/>

Part-time Assistant Professor

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Passionate and dedicated engineering professional and college professor with a strong commitment to advancing both academic excellence and practical engineering solutions. With extensive experience in industry and research, I excel at bridging the gap between theoretical concepts and real-world applications, particularly in areas such as mechanical design, material performance, and bolted joint analysis.

## EDUCATION

### California Institute of Technology

Pasadena, CA · 2017-2021

Ph.D. in Mechanical Engineering

M.S. in Mechanical Engineering

### Georgia Institute of Technology

Atlanta, GA · 2012-2016

B.S. in Mechanical Engineering

## RESEARCH

### Mechanical Characteristics of U-bolts

Atlanta, GA · 2022-2024

Engineering Systems Inc. – Senior Staff Consultant

- Conducted in-depth analysis of the torque-tension relationship in U-bolts, identifying key factors affecting preload accuracy and joint performance.
- Developed improved methods for predicting clamp load in bolted joints, enhancing reliability in mechanical assemblies.
- Presented findings on optimizing U-bolt design for various load conditions, contributing to advancements in bolted joint performance analysis.

### Mechanics of Engineered Living Materials

Pasadena, CA · 2018-2021

California Institute of Technology – Graduate Research Assistant

- Develop a general experimental methodology, non-harmful to living cells, to obtain material properties of individual cellular components and composite living materials.
- Perform micro-compression and force-controlled atomic-force microscope experiments.
- Utilize an inverse analysis to extract properties of interest from experimental data.

### University Nanosatellite Program

Atlanta, GA · 2014

- Built a satellite receiver station on campus to communicate with Prox-1 satellite.
- Lead and taught team to prepare campus ground station to flight-readiness.
- Set up a public website to host received transmissions and other updates.

## WORK EXPERIENCE

### Kennesaw State University

Atlanta, GA · 2024-present

- Designed and taught the Machine Design course, revamping the curriculum with new lecture materials, quizzes, exams, and problem sets to strengthen student understanding of power transmission and stress analysis.
- Integrated real-world applications and supplemental videos into lectures, enhancing student engagement and connecting theoretical concepts to practical engineering problems
- Provided individualized support and mentorship to a diverse student body, fostering academic growth and preparing students for successful engineering careers.

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## Engineering Systems Inc.

Atlanta, GA · 2021-2024

- Led root cause failure analyses for mechanical systems, delivering expert insights that informed corrective actions and improved client outcomes.
- Conducted finite element analysis (FEA) and stress analysis using first principles, providing detailed technical reports and solutions for complex engineering challenges.
- Mentored junior engineers, fostering a collaborative environment and enhancing team capabilities in engineering problem-solving and analysis.

## The Boeing Company

Everett, WA · Summer of 2015, 2016, and 2017

Structural Analysis Intern

### Summer 2017 (Automation of Shear Joint Coupons):

- Determined material properties to properly account for non-linearities, plasticity, damage, and failure in the model.
- Automated shear joint coupon generation in Abaqus through creation of a Python plug-in.
- Correlated results to test data and shear joint allowables to validate the modeling process.

### Summer 2016 (Main Landing Gear Door Honeycomb Behavior):

- Investigated the honeycomb material behavior on the main landing gear door during impact.
- Created a single element test tool GUI in MATLAB that creates Abaqus and LS-Dyna input files.
- Tested a FEM panel of the honeycomb core under impact from various angles in Abaqus.

### Summer 2015 (Bird-Strike FEM):

- Created standard finite-element model of bird to use in all bird-strike analyses.
- Compared finite-element analysis results to quantitative load cell data and qualitative high-speed camera data.

## NASA's Jet Propulsion Laboratory

Pasadena, CA · Summer of 2013, 2014

### Summer 2014 (Ka-Band Parabolic Deployable Antenna):

- Designed new system for deployment of ribs supporting the antenna mesh.
- Acquired or created parts to implement new design.
- Tested deployment prototype and performed stress analysis on testing data.

### Summer 2013 (CubeSat ground station):

- Set up remote access and control of the receiving system.
- Implemented new software (Orbitron and PuTTY) to use as an interface between the computer and the hardware previously installed in the ground station.

## ACCOMPLISHMENTS Honors

EAS New Horizons Diversity, Equity & Inclusion Award, Caltech – 2021

NASA Group Achievement Award – 2019

Summa Cum Laude, Georgia Institute of Technology – 2016

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## Publications

"Cell wall and cytoskeletal contributions in single cell biomechanics of *Nicotiana tabacum*", **L. Ginsberg**, R. McDonald, Q. Lin, R. Hendrickx, G. Spigolon, G. Ravichandran, C. Daraio, and E. Roumeli, *Quantitative Plant Biology*, Vol. 3, January 2022.

*Multiscale Mechanical Characterization of Subcellular Structures in Living Walled Cells*. Dissertation (Ph.D.), California Institute of Technology (2021).

"Structure and Biomechanics during Xylem Vessel Transdifferentiation in *Arabidopsis thaliana*", E. Roumeli, **L. Ginsberg**,† R. McDonald, G. Spigolon, R. Hendrickx, M. Ohtani, T. Demura, G. Ravichandran, and C. Daraio, *Plants*, Vol. 9, Issue December, 2020.

## Conferences

"Basics of Fatigue, Fracture, and Forensics," presented at the Society of Experimental Mechanics Annual Meeting, **L. Ginsberg**, P. Umberger, Vancouver, WA, June 3, 2024.

"Fatigue Crack Growth and Relief of Preload in Bent, Threaded Fasteners (U-bolts)," presented at the Society of Experimental Mechanics Annual Meeting, **L. Ginsberg**., J. Hassebrock, J. Wagner, H. Iwand, A. Pettinger, Orlando, FL, June 7, 2023.

"Cell wall and Cytoskeletal Contributions in Single Cell Biomechanics of *Nicotiana tabacum*," presented at the Society of Experimental Mechanics Annual Meeting, **L. Ginsberg**., R. McDonald, Q. Lin, R. Hendrickx, G. Spigolon, G. Ravichandran, C. Daraio, E. Roumeli, Pittsburgh, PA, June 14, 2022.

"*Bacillus subtilis* as polymeric crosslinker and particle reinforcement in NHMAA hydrogel," presented at Society of Engineering Science Virtual Technical Meeting, **L. Ginsberg**, P. Chittur, S. Sim, J. Kornfield, D. Tirrell, G. Ravichandran, September 29, 2020.

"Microcompression of plant cells to estimate turgor pressure," presented at the Society of Experimental Mechanics XIV International Congress, **L. Ginsberg**, E. Roumeli, C. Daraio, and G. Ravichandran, August 14, 2020.

"Extracting mechanical properties of plant cells from atomic-force microscopy and micro-compression experiments," presented at Society of Engineering Science Mechanobiology Annual Symposium, **L. Ginsberg**, E. Roumeli, C. Daraio, and G. Ravichandran, St. Louis, MO, October 12, 2019.

"Extracting mechanical properties of thin biofilms using inverse analysis," presented at Society of Experimental Mechanics Annual Meeting (SEM 2019); **L. Ginsberg** and G. Ravichandran, Reno, NV, August 3, 2019.