# TREVOR J. JONES, PHD

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## PROFESSIONAL POSITIONS

**Assistant Professor** — **Pittsburgh, PA**
CARNEGIE MELLON UNIVERSITY — DEPARTMENT OF MECHANICAL ENGINEERING — AUG 2023 - PRESENT

## EDUCATION

**Princeton University** — **Princeton, NJ**
DOCTOR OF PHILOSOPHY IN CHEMICAL AND BIOLOGICAL ENGINEERING — MAY 2023

- Dissertation: Fabrication, Form, and Function of Morphomechanical rods
- Advisor: Pierre-Thomas Brun

**Vanderbilt University** — **Nashville, TN**
BACHELOR OF ENGINEERING IN CHEMICAL ENGINEERING — *Summa Cum Laude* — MAY 2017

## PUBLICATIONS

5 **T.J. Jones**, T. Dupuis, E. Jambon-Puillet, J. Marthelot, P.T. Brun, "Soft deployable structures via core-shell inflatables," ***PRL***. 2023. -[doi]

4 **T.J. Jones**, E. Jambon-Puillet, J. Marthelot, P.T. Brun, "Bubble casting soft robotics," ***Nature***. 2021. -[doi] -[cover]

3 E. Jambon-Puillet, **T.J. Jones**, P.T. Brun, "Deformation and bursting of elastic capsules impacting a rigid wall," ***Nature Physics***. 2020. -[doi]

2 J. Schleifer, J. Marthelot, **T.J. Jones**, P.T. Brun, "The fingerprint of a flow: wrinkle patterns in nonuniform coatings on pre-stretched soft foundations," ***Soft Matter***. 2019. -[doi]

1 C. Klein, J. Sallai, **T.J. Jones**, C.R. Iacovella, C. McCabe, P.T. Cummings, "A hierarchical component based approach to screening properties of soft matter," ***FOMMS***. 2016. -[doi]

## TALKS

- *Building flexible yet stiff structures through beadwork,* SIAM MS24. Pittsburgh, PA. *May 2024*
- *Multistability in beadwoven structures,* APS March Meeting. Minneapolis, MN. *Mar 2024*
- *From bubbles, balloons, and beads to morphomechanical rods,* SES. Minneapolis, MN. *Oct 2023*
- *Mechanics Seminar, CMU College of Engineering.* Pittsburgh, PA. *Sep 2023*
- *March Meeting: Gallery of Soft Matter award session, APS DSOFT.* Las Vegas, NV. *Mar 2023*
- *Bubble casting soft robotics,* Princeton Advanced Manufacturing Initiative. Princeton, NJ. *Mar 2023*
- *Physical Mathematics Seminar, MIT Math Department.* Boston, MA. *Dec 2022*
- *Rising Stars in Soft and Biological Matter, U. Chicago and U. California, SD. virtual.* *Oct 2022*
- *Fluid mediated soft actuators,* Princeton Research Day. Princeton, NJ. *May 2022*
- *Deployable structures with core-shell balloons,* APS March Meeting. Chicago, IL. *Mar 2022*
- *Fluid mediated soft actuators,* DSOFT Gallery of Soft Matter. *Mar 2022*
- Northeast Complex Fluids and Soft Matter workshops. PA, NJ, NY, and *virtual*. *2018-2022*
- *Bubble casting soft robotics,* Future of Manufacturing workshop. U. Pennsylvania (*virtual*) *Dec 2020*
- *Design and mechanics of complex inflatable networks,* APS March Meeting. Denver, CO. *Mar 2020*
- *All-in-one design of soft machines,* APS March Meeting. Boston, MA. *Mar 2019*
- *Fluid mediated elastic tentacles,* MEPHiSTO. Cargese, Corsica. *Aug 2018*

## Awards

*2023* **Jui Dasgupta Outstanding Ph.D. Dissertation Award** — Princeton CBE
*2022* **Rising Star in Soft and Biological Matter** — NSF MRSEC
*2022* **Lighting the Pathway Fellow** — AISES
*2022* **Trailblazers in Engineering Fellow** — Purdue U.
*2022* **Gallery of Soft Matter Award** — APS DSOFT
*2021* **SEAS Award for Excellence** — Princeton U.
*2017* **Provost Graduate Fellowship** — *declined* — Vanderbilt U.
*2013* **Frederick M & Jean B Riggs Scholar** — Vanderbilt U.

## Research

**Principal Investigator** — Carnegie Mellon University — **Pittsburgh, PA**
Mechanically Intelligent Engineered Structures Laboratory — Aug 2023 - Present

**Graduate Assistant in Research** — Princeton University — **Princeton, NJ**
Liquids & Elasticity Laboratory — Pierre-Thomas Brun — Jan 2018 - Jun 2023

- Develop predictive models for the mechanics of interfacial flows, elastic membranes, and elasto-active materials.
- Study the shape-morphing of nonlinear beam networks undergoing local curvature and length changes.
- Formed on-going projects for architected materials using traditional bead-weaving.

**Undergraduate Research Assistant** — Vanderbilt University — **Nashville, TN**
Multiscale Modeling and Simulaitons Centre — Clare McCabe — Jun 2015 - May 2017

- Developed open source software (mBuild) in Python for initializing molecular dynamic simulations.
- Leveraged core concepts in nanotechnology, molecular dynamics, and scientific computing to construct an automated process for the large scale parameter screening of soft matter lubrication for NEMS and MEMS.

## Research Mentoring

**Lab Safety Coordinator** — **Princeton, NJ**
Princeton University — Liquids & Elasticity Laboratory — Sep 2021 - Sep 2022

- Coordinate the use and training for the Instron, laser cutter, 3D printers, and CNC milling among others
- Manage safety protocol, reporting, and resources as well as equipment usage and organization

**Senior Thesis Mentor** — **Princeton, NJ**
Princeton University — Liquids & Elasticity Laboratory — Jan 2018 - May 2023

6 **Richard Huang**: *"Elasto-active matter"* ..... *Jun 2022 - May 2023*
- NSF GRFP awardee
- Sigma Xi book prize
- Project X summer research funding award

5 **Matthew Adler**: *"Programming morphoelastic rod networks"* ..... *Sep 2021 - May 2022*
- Co-producer Gallery of Soft Matter video

4 **Kevin Yee**: *"Mechanical behavior of pneumatic granular beams"* ..... *Sep 2021 - May 2022*

3 **François Barras**: *"Coiling of an elastic rod embedded in an elastomeric matrix"* ..... *Apr 2019 - Sep 2019*

2 **Bartosz Kaczmarski**: *"Mechanical behavior of pressurized rods"* ..... *Sep 2018 - Mar 2019*
- 1st Place Award for best engineering thesis

1 **Jonathon Schleifer**: *"Wrinkling in polymer films of varying thickness"* ..... *Jan 2018 - Sep 2018*
- Co-author for a publication in ***Soft Matter***

**High School Independent Research Mentor** — **virtual**
Polygence — Dec 2021 - Present

- **Jefferey**: *"Optimization of a basketball shot"*

## Teaching

**Instructor of Record** — **Pittsburgh, PA**
Carnegie Mellon University — 2023 - Present

· 24-751 (12-755): Introduction to Solids I ..... *Fall 2023*

**Assistant in Instruction** — **Princeton, NJ**
Princeton University — 2018 - 2020

· CBE 245: Introduction to Chemical and Biochemical Engineering Principles ..... J.L. Avalos — *Fall 2020*
· CBE 441: Chemical Reaction Engineering ..... J.L. Avalos — *Spring 2020*
· CBE 341: Mass, Momentum, and Heat Transport ..... P.-T. Brun — *Fall 2018*

**Undergraduate Teaching Assistant** — **Nashville, TN**
Vanderbilt University — Spring 2017

· ChBE 3600: Chemical Process Control ..... K.A. Debelak

**Science and Engineering Tutor** — **Nashville, TN**
NSF — Tennessee Louis Stokes Alliance for Minority Participation — Fall 2014 - Fall 2016

· Calculus I II & III, Chemistry I & II, Physics I & II, Organic Chemistry, Chem. Eng. core curriculum

## Published Media

**Growing elastomeric stalactites using interfacial flows** — **Art of Science**
B. Venkateswaran, L. Dreier, **T.J. Jones**, P.-T. Brun -[Princeton] — 2023

**Bubble Casting Soft Robotics**

· Research interview and coverage -[EPrinceton] -[FYFD] -[BBC]
· Gallery of Soft Matter interview -[Physics Magazine] -[APS]

- O. Shishkov, A. Blonder, S. Gowen, **T.J. Jones**, M. Jounanlanne, Q. Zhang, E. Del Gado, I. Bischofberger, "Editorial: First Annual APS DSOFT Gallery of Soft Matter," ***Phys. Rev. E.***. 2022. -[doi]

**Native American Heritage Month**

· Interview -[EPrinceton] -[LCO Tribal News]

**The Logan Letters** — **XULON Press**
L. Shannon and L. Kresser — 2017

- T.J. Jones, "Chapter 18: Four More Friends Share Their Stories," **Pg. 211-215**.

## Social and Professional Engagement

**Indigenous studies working group** — **Pittsburgh, PA**
Carnegie Mellon University — AY 2023 - 2024

**Graduate Education Committee** — Graduate recruitment subcommittee — **Pittsburgh, PA**
Carnegie Mellon University — Department of Mechanical Engineering — AY 2023 - 2024

· Lead graduate school info session on Oct 12
· CIT faculty representative at AISES National Conference

**Session Co-chair** — **Minneapolis, MN**
SES Minisymposium 9–3 Morphing Matter — Oct 2023

· 9-3 Morphing Matter: Bioinspiration Computational Design Fabrication Mechanics and Sustainability

**Scholarship Reviewer** — **virtual**
AISES — AYs 2022 - 2024

· Volunteer as a scholarship reviewer for undergraduate scholarships supported by AISES

### National American Indian Science and Engineering Science Fair Judge — virtual — conference

AISES — MAY 2023

· Volunteer as a poster session judge for grades 5-12 supported by AISES

### Full-Circle Mentor — virtual

AISES — JUN 2022 - JUN 2023

· Volunteered as an academic mentor to AISES college student member
· Co-create a plan for STEM excellence by identifying mentee's goals and developing skills/strategies for success
· Advise navigating academia as a member of a tribal nation

### Near-Peer Mentor — Princeton, NJ

NSF — PRINCETON UNIVERSITY — BIOPHYSICS REU — JUN 2022 - AUG 2022

· Volunteer as a professional mentor to a visiting undergraduate researcher
· Advise on research communication, career planning, and graduate school through casual encounters (e.g. coffee)

### $V^2$ Mentor — Nashville, TN

VANDERBILT UNIVERSITY — AY 2016 - 2017

· Volunteer as an academic and university-life mentor for a group of Engineering freshmen
· Led group and individual meetings to advise on university resources, academic planning, and community building

### Science and Engineering Tutor — Nashville, TN

NSF — TENNESSEE LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION — FALL 2014 - FALL 2016

· Tutor STEM courses to improve quality of the learning environment for underrepresented STEM students at local universities (e.g. Vanderbilt, Fisk, Tennessee State)

## Workshops

*2024* NCFDD Faculty Success Program
*2022* Rising Stars in Soft and Biological Matter Symposium
*2022* Lighting the Pathways to Faculty Careers for Natives in STEM
*2022* Trailblazers in Engineering Workshop
*2022* Inclusive Academy Symposium: Celebrating Genius and Joy
*2018* Mechanics and Physics of Stretchable Objects

## Professional Memberships

· American Physical Society (APS)
· American Indian Science and Engineering Society (AISES)
· American Institute of Chemical Engineers (AIChE)