

# TREVOR J. JONES, PHD

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## PROFESSIONAL POSITIONS

### Assistant Professor

CARNEGIE MELLON UNIVERSITY — DEPARTMENT OF MECHANICAL ENGINEERING

Pittsburgh, PA

AUG 2023 - PRESENT

## EDUCATION

### Princeton University

DOCTOR OF PHILOSOPHY IN CHEMICAL AND BIOLOGICAL ENGINEERING

Princeton, NJ

MAY 2023

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

### Vanderbilt University







BACHELOR OF ENGINEERING IN CHEMICAL ENGINEERING — *Summa Cum Laude*

Nashville, TN

MAY 2017

- Summa Cum Laude



## 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

- *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 DSOF*. 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*, DSOF 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 — <i>declined</i>	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** — Pierre-Thomas Brun — Soft Matter Mechanics **Princeton, NJ**  
PRINCETON UNIVERSITY — LIQUIDS & ELASTICITY LABORATORY 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** — Clare McCabe — MD Simulation **Nashville, TN**  
VANDERBILT UNIVERSITY — MULTISCALE MODELING AND SIMULATIONS CENTRE 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 - PRESENT

- 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 Kaczmarek**: *"Mechanical behavior of pressurized rods"* ..... Sep 2018 - Mar 2019
- 1<sup>st</sup> 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**  
POLYGENE DEC 2021 - PRESENT

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

## TEACHING

### Instructor of Record

CARNEGIE MELLON UNIVERSITY

Pittsburgh, PA

2023 - PRESENT

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

### Assistant in Instruction

PRINCETON UNIVERSITY

Princeton, NJ

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

VANDERBILT UNIVERSITY

Nashville, TN

SPRING 2017

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

### Science and Engineering Tutor

NSF — TENNESSEE LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

Nashville, TN

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

B. VENKATESWARAN, L. DREIER, T.J. JONES, P.-T. BRUN -[PRINCETON]

Art of Science

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 DSOFTE Gallery of Soft Matter," *Phys. Rev. E.* 2022. -[doi]

### Native American Heritage Month

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

### The Logan Letters

L. SHANNON AND L. KRESSER

XULON Press

2017

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

## SOCIAL AND PROFESSIONAL ENGAGEMENT

### Indigenous studies working group

CARNEGIE MELLON UNIVERSITY

Pittsburgh, PA

AY 2023 - 2024

### Graduate Education Committee — Graduate recruitment subcommittee

CARNEGIE MELLON UNIVERSITY — DEPARTMENT OF MECHANICAL ENGINEERING

Pittsburgh, PA

AY 2023 - 2024

- Lead graduate school info session on Oct 12
- CIT faculty representative at AISES National Conference
- Lead department website updates

### Session Co-chair

SES MINISYMPOSIUM 9—3 MORPHING MATTER

Minneapolis, MN

OCT 2023

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

### Scholarship Reviewer

AISES

virtual

AYs 2022 - 2024

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

## **National American Indian Science and Engineering Science Fair Judge**

AISES

**virtual — conference**

MAY 2023

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

## **Full-Circle Mentor**

AISES

**virtual**

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**

NSF — PRINCETON UNIVERSITY — BIOPHYSICS REU

**Princeton, NJ**

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<sup>2</sup> Mentor**

VANDERBILT UNIVERSITY

**Nashville, TN**

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**

NSF — TENNESSEE LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

**Nashville, TN**

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**

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)