

# TREVOR J. JONES

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✉ [tjjones@princeton.edu](mailto:tjjones@princeton.edu) — 🎓 Trevor J. Jones — 🐦 @Trev\_J\_Jones

## EDUCATION

### Princeton University

DOCTOR OF PHILOSOPHY IN CHEMICAL AND BIOLOGICAL ENGINEERING

Princeton, NJ

2023 (Projected)

- Dissertation: Morpho-mechanical rods: from soft robotics to deployable structures
- 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]


## INVITED TALKS

- \* *March Meeting: Gallery of Soft Matter award session, APS DSOF*. Las Vegas, NV. 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

## PRESENTATIONS

- † *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

- 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 DSOF
- 2021 **SEAS Award for Excellence** Princeton U.
- 2017 **Provost Graduate Fellowship** — *declined* Vanderbilt U.
- 2013 **Frederick M & Jean B Riggs Scholar** Vanderbilt U.

## RESEARCH EXPERIENCE

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### Graduate Assistant in Research — Pierre-Thomas Brun — Soft Matter Mechanics

Princeton, NJ

PRINCETON UNIVERSITY — LIQUIDS & ELASTICITY LABORATORY

Jan 2018 - Present

- 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 EXPERIENCE

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### 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 — \* notable outcomes

Princeton, NJ

PRINCETON UNIVERSITY — LIQUIDS & ELASTICITY LABORATORY

Jan 2018 - Present

- **Richard Huang:** *"Elasto-active matter"*  
\* NSF GRFP awardee  
\* Project X summer research funding award
- **Matthew Adler:** *"Programming morphoelastic rod networks"*  
\* Co-producer Gallery of Soft Matter video
- **Kevin Yee:** *"Mechanical behavior of pneumatic granular beams"*  
Sep 2021 - May 2022
- **François Barras:** *"Coiling of an elastic rod embedded in an elastomeric matrix"*  
Apr 2019 - Sep 2019
- **Bartosz Kaczmarek:** *"Mechanical behavior of pressurized rods"*  
Sep 2018 - Mar 2019  
\* 1<sup>st</sup> Place Award for best engineering thesis  
\* PhD. Candidate at Stanford U.
- **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

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

## TEACHING EXPERIENCE

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### 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

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### Growing elastomeric stalactites using interfacial flows

B. VENKATESWARAN, L. DREIER, T.J. Jones, P.-T. BRUN

*Art of Science*


2023

### Bubble Casting Soft Robotics

- Research interview and coverage
- Gallery of Soft Matter interview

-[EPrints] -[FYFD] -[BBC]

-[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. 

### Native American Heritage Month

- Interview

-[EPrints] -[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

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### 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)

### Scholarship Reviewer

AISES

*virtual*

a.y. 2022 - 2023

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

### V<sup>2</sup> Mentor

VANDERBILT UNIVERSITY

*Nashville, TN*

a.y. 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)