

C. NADIR KAPLAN, Ph.D.

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SCHOLARLY PROFILE

Soft matter & biological physicist with a theoretical & computational expertise in elasticity, fluid mechanics, differential geometry, and statistical physics.

My current research is focused on:

- Mechanobiology of mesenchymal cell migration,
- Controlled deformation dynamics of soft elastic films (hydrogels and elastomers) and non-Newtonian fluids (with implications in embedded 3D printing),
- Dynamics of elastic curves bounded on non-Euclidean surfaces,
- Variational neural networks for forward and inverse design problems,
- Dynamics of flow vortices in thin liquid films with free interfaces.

My past research was focused on:

- Synthetic biomimetic assembly with implications on additive manufacturing,
- Drying-induced deposition in volatile suspensions,
- Molecular order/morphology coupling in liquid crystalline membranes made of chiral nanorods,
- Statistical mechanics of non-uniform spin systems: small-world networks, percolation, strongly correlated electronic systems, classical and quantum spin glasses with frozen disorder,
- Molecular dynamics simulations of water flow through carbon nanotubes.

POSITIONS & EMPLOYMENT

2024– **Affiliate Faculty**

Department of Mechanical Engineering, Virginia Tech, Blacksburg, VA

2019– **Assistant Professor of Physics**

Department of Physics, Virginia Tech, Blacksburg, VA

2016–19 **Research Associate in Materials Science & Mechanical Engineering**

Paulson School of Engineering and Applied Sciences, Harvard University, Cambridge, MA

Faculty advisor: Joanna Aizenberg

2012–16 **Postdoctoral Researcher in Applied Mathematics**

Paulson School of Engineering and Applied Sciences, Harvard University, Cambridge, MA

Faculty advisor: L. Mahadevan

EDUCATION

2012 **Ph.D. in Physics**, Brandeis University, Waltham, MA

Thesis: Colloidal membranes: The rich confluence of geometry and liquid crystals

Faculty advisor: Robert B. Meyer

2008 **M.S in Physics**, Koç University, Istanbul, Turkey
Thesis: Renormalization-group theory of classical and quantum systems with frozen disorder
Faculty advisor: A. Nihat Berker

2006 **B.S. in Engineering Physics**, Istanbul Technical University, Istanbul, Turkey

PUBLICATIONS (citations: 737; h-index: 13; i10-index: 16)

Top five cited papers

1. **C. N. Kaplan***, W. L. Noorduin*, L. Li, R. Sadza, L. Folkertsma, J. Aizenberg, L. Mahadevan. Controlled growth and form of precipitating microsculptures. **Science** 355, 1395 (2017). (*equal contribution) (cited 99 times)
2. **C. N. Kaplan**, L. Mahadevan. Evaporation-driven ring and film deposition from colloidal droplets. **J. Fluid Mech.** 781, R2 (2015). (cited 83 times)
3. S. Srinivasan, **C. N. Kaplan**, L. Mahadevan. A multiphase theory for spreading microbial swarms and films. **eLife** 8, e42697 (2019). (cited 81 times)
4. P. A. Korevaar, **C. N. Kaplan**, A. Grinthal, R. M. Rust, J. Aizenberg. Non-equilibrium signal integration in hydrogels. **Nat. Commun.** 11, 386 (2020). (cited 70 times)
5. D. J. Bonthuis, K. F. Rinne, K. Falk, **C. N. Kaplan**, D. Horinek, A. N. Berker, L. Bocquet, R. R. Netz. Theory and simulations of water flow through carbon nanotubes: prospects and pitfalls. **J. Phys. Condens. Matter** 23, 184110 (2011). (cited 66 times)

Preprint

6. C. Katke, **C. N. Kaplan**. A hyperelastic theory for nonlinear hydrogel diffusiophoresis. **Phys. Rev. E** (accepted) arXiv:2603.01512; DOI.
7. F. bin Selim, **C. N. Kaplan**. Geometric theory of elastic curves constrained on rigid curved surfaces. arXiv:2609.12952; DOI.

In preparation

8. C. Katke, **C. N. Kaplan**. Variational functional neural networks (vfNN). *target journal: PRX Intelligence (to be submitted)*.

Additional publications

9. W. Shu, **C. N. Kaplan**. A multiscale theory for mesenchymal cell migration in straight or curved channel confinement. **Biophys. J.** 124, 2428-2441 (2025); DOI.
10. C. Katke, P. A. Korevaar, **C. N. Kaplan**. Diffusiophoretic fast swelling of chemically responsive hydrogels. **Phys. Rev. Lett.** 132, 208201 (2024); DOI.
11. W. Shu, **C. N. Kaplan**, J. R. Barone. Dynamic, viscoelasticity-driven shape change of elastomer bilayers. **ACS Appl. Polym. Mater.** 6, 31603169 (2024); DOI.
12. W. Shu, **C. N. Kaplan**. A multiscale theory for spreading and migration of adhesion-reinforced mesenchymal cells. **J. R. Soc. Interface** 20, 20230317 (2023); DOI.
13. S. Brandt, I. Pavlichenko, A. V. Shneidman, H. Patel, A. Tripp, T. S. B. Wong, S. Lazaro, E. Thompson, A. Maltz, T. Storwick, H. Beggs, K. Szendrei-Temesi, B. Lotsch, **C. N. Kaplan**, C. W. Visser, M. P. Brenner, V. N. Murthy, J. Aizenberg. Non-Equilibrium Sensing of Volatile Compounds Using Active and Passive Analyte Delivery. **Proc. Natl. Acad. Sci. U.S.A.** 120, e230392812 (2023); DOI.

14. C. Katke*, E. P. Villalmanzo*, K. Spustova, R. Ryskulov, **C. N. Kaplan**, I. Gözen. Colony-like protocell superstructures. **ACS Nano** 17, 3368-3382 (2023); DOI. (*equal contribution)
15. W. Shu, **C. N. Kaplan**. A multiscale whole-cell theory for mechano-sensitive migration on viscoelastic substrates. **Biophys. J.** 122, 114-129 (2023); DOI.
16. **C. N. Kaplan**, L. Mahadevan. Geometrical dynamics of edge-driven accretive surface growth. **Proc. Roy. Soc. A** 478, 20210638 (2022); DOI.
17. T. Gibaud, **C. N. Kaplan**, P. Sharma, A. Ward, M. J. Zakhary, R. Oldenbourg, R. B. Meyer, R. D. Kamien, T. R. Powers, Z. Dogic. Achiral symmetry breaking and positive Gaussian modulus lead to scalloped colloidal membranes. **Proc. Natl. Acad. Sci. U.S.A.** 114, E3376 (2017).
18. **C. N. Kaplan**, N. Wu, S. Mandre, J. Aizenberg, L. Mahadevan. Dynamics of evaporative colloidal patterning. **Phys. Fluids** 27, 092105 (2015).
19. M. J. Zakhary, T. Gibaud, **C. N. Kaplan**, E. Barry, R. Oldenbourg, R. B. Meyer, Z. Dogic. Imprintable membranes from incomplete chiral coalescence. **Nat. Commun.** 5, 3063 (2014).
20. **C. N. Kaplan**, R. B. Meyer. Colloidal membranes of hard rods: unified theory of free edge structure and twist walls. **Soft Matter** 10, 4700 (2014).
21. **C. N. Kaplan**, T. Gibaud, R. B. Meyer. Intrinsic curvature determines the crinkled edges of crenellated disks. **Soft Matter** 9, 8210 (2013).
22. **C. N. Kaplan**, H. Tu, R. A. Pelcovits, R. B. Meyer. Theory of depletion induced phase transition from chiral smectic *A* twisted ribbons to semi-infinite flat membranes. **Phys. Rev. E** 82, 021701 (2010). *The Stephan Berko research prize of Brandeis Physics*
23. D. J. Bonhuis, K. Falk, **C. N. Kaplan**, D. Horinek, A. N. Berker, L. Bocquet, R. R. Netz. Comment on pumping of confined water in carbon nanotubes by rotation-translation coupling. **Phys. Rev. Lett.** 105, 209401 (2010).
24. **C. N. Kaplan**, M. Hinczewski, A. N. Berker. Infinitely robust order and local order-parameter tulips in Apollonian networks with quenched disorder. **Phys. Rev. E** 79, 061120 (2009). [PRE kaleidoscope image, June 2009](#).
25. **C. N. Kaplan**, A. N. Berker, M. Hinczewski. Frustrated further-neighbor antiferromagnetic and electron-hopping interactions in the $d = 3$ $t-J$ model: Finite-temperature global phase diagrams from renormalization-group theory. **Phys. Rev. B** 80, 214529 (2009).
26. **C. N. Kaplan**, A. N. Berker. Quantum-mechanically induced asymmetry in the phase diagrams of spin-glass systems. **Phys. Rev. Lett.** 100, 027204 (2008).

Proceedings

1. **C. N. Kaplan**, J. Aizenberg. Morphing hard and soft bioinspired materials by reaction-transport dynamics. **Computational Modeling: From Chemistry to Materials to Biology** (Proceedings of 25th Solvay Conference in Chemistry) (2021). DOI
2. **C. N. Kaplan**. Theory of chiral smectic *A* liquid crystalline membranes. **Physica A** 389, 2962-2965 (2010), *Proceedings of the Nihat Berker 60th Birthday Symposium*.

Media coverage

My 2024 *Phys. Rev. Lett.* publication was covered in various media outlets including [Roanoke Times](#), [VT News](#), [EurekAlert!](#), [Science Daily](#), and [Bioengineer.org](#).

My 2023 *Biophys. J.* publication was covered in media outlets [VTX News](#), [EurekAlert!](#), [Science Daily](#), and [Phys.org](#).

My 2017 *Science* publication was covered in various media outlets including [Phys. Org.](#), [Harvard SEAS](#), [Wyss Institute](#), [Chemistry World](#), [The Kavli Foundation](#), [National Science Foundation](#), [AMOLF \(NL\)](#).

My 2015 *Phys. Fluids* publication was covered in the media outlets [American Institute of Physics](#), [EurekAlert!](#), [Harvard SEAS](#), [Harvard Physics](#).

PRESENTATIONS

Invited talks

Beyond Biomimicry: Autonomous Soft Matter via Biophysical Feedback Cycles

- 12/2026 Physics Dept. Colloquium, Georgetown University, Washington, DC
- 10/2026 ChE Graduate Seminar, University of Pittsburgh, Pittsburgh, PA
- 10/2026 Biophysics Seminar, Case Western Reserve University, Cleveland, OH
- 10/2026 Mech. Eng. Research Seminar, Georgia Institute of Technology, Atlanta, GA

Geometric theory of elastic curves bounded on non-Euclidean surfaces

- 05/2026 Intl. Symposium on Stochastic Complex Systems, Virginia Tech, Blacksburg, VA

Mechanics & dynamics of shape-shifting soft matter

- 04/2026 Condensed and Living Matter Seminar, University of Pennsylvania, Philadelphia, PA
- 04/2026 Materials Science Seminar, Rutgers University, Camden, NJ

Rapid nonlinear hydrogel diffusiophoresis

- 05/2025 Bioinspired Science: IRES BioFlow Workshop, Campus Peñalolén, Universidad Adolfo Ibáñez, Santiago, Chile

Mechanobiology of mesenchymal migration: from holistic to reductionist modeling

- 04/2025 Biological Physics/Physical Biology (BPPB) Online Seminar Series, [web link](#), [Youtube link](#)

Controlled dynamics of shape-shifting soft matter

- 03/2024 Physics & Astronomy Seminar, James Madison University, Harrisonburg, VA
- 09/2024 Chemistry Seminar, Chalmers University of Technology, Gothenburg, Sweden
- 09/2024 Oslo Workshop, University of Oslo, Oslo, Norway

A multiscale theory for opposing durotactic regimes in mesenchymal cell migration

- 03/2022 APS March Meeting, Chicago, IL

Morphing hard and soft matter by reaction-transport dynamics

- 11/2019 86th Annual Meeting of the APS Southeastern Section, Wrightsville Beach, NC
- 02/2019 Physics Department Colloquium, Virginia Tech, Blacksburg, VA
- 01/2019 Materials and Interfaces Department Seminar, Weizmann Institute of Science, Rehovot, Israel
- 12/2018 Ringberg Castle Seminar: Matter to Life, Kreuth, Germany
- 10/2018 Symposium on Organoid Organization, Center for Systems Biology, Dresden, Germany

Theoretical design of hard and soft biomimetic materials

- 12/2018 Biomaterials Department Seminar, MPI of Colloids and Interfaces, Golm, Germany
- 12/2018 Cellular Biophysics Seminar, MPI for Medical Research, Heidelberg, Germany
- 12/2018 Institute Seminar, MPI for Intelligent Systems, Stuttgart, Germany

- 10/2018 Engineering and Natural Sciences Seminar, Kadir Has University, Istanbul, Turkey
- 08/2018 Squishy Physics Seminar, Harvard University
- 04/2018 Oculus VR, Redmond, WA
- 03/2018 Physics Department Seminar, University of California, Merced
- 03/2018 Mechanical and Industrial Engineering Department Seminar, Northeastern University

Controlled growth and form of precipitating microsculptures

- 07/2017 Society of Engineering Science 54th Annual Meeting, Northeastern University
- 06/2017 Gordon Research Conference on Crystal Growth, University of New England
- 06/2017 Gordon Research Seminar on Crystal Growth, University of New England
- 04/2016 Simons Center for Data Analysis, Simons Foundation
- 03/2016 Physical Mathematics Seminar, Massachusetts Institute of Technology (MIT)
- 12/2015 Squishy Physics Seminar, Harvard University

Rational design of self-organization in chemical precipitation

- 01/2017 Applied Mathematics Seminar, University of Waterloo, Canada

Dynamics of evaporation-driven colloidal patterning

- 12/2013 Istanbul Technical University, Turkey

Evolution of colloidal deposits in evaporating fluid films

- 10/2013 Kavli Meetings, Harvard University
- 06/2013 20th Statistical Physics Days, Erciyes University, Turkey

Theory of colloidal monolayers assembled from chiral rod-like particles

- 02/2012 University of Massachusetts, Amherst
- 02/2012 Condensed Matter & Biological Physics Seminar, Syracuse University

Theory of chiral smectic A liquid crystalline membranes

- 05/2010 The 19th Annual Student Research Symposium, Brandeis University

The effect of chirality on self-assembly of attractive rod-like particles

- 04/2010 MRSEC Seminar, Brandeis University

Renormalization-group theory of $d = 3$ $t - J$ models

- 07/2006 Workshop on Solid State and Materials Chemistry, MPI Dresden, Germany

Contributed talks

Investigating hydrogel diffusiophoresis using mesoscopic computational modeling

- 11/2026 APS DFD Meeting, Orlando, FL

Geometric theory of elastic curves bounded on non-Euclidean surfaces

- 05/2026 Soft Math Symposium, Harvard University, Cambridge, MA
- 03/2026 APS Global Physics Summit, Denver, CO

Polyelectrolyte hydrogel diffusiophoresis

- 11/2025 APS DFD Meeting, Houston, TX
(*Selected for the Interact Session from submitted abstracts).

An augmented thin-film theory for Moffatt eddies induced by contact line motion

- 03/2026 APS Global Physics Summit, Denver, CO
- 11/2025 APS DFD Meeting, Houston, TX

Rapid nonlinear hydrogel diffusiophoresis

03/2025 APS Global Physics Summit, Anaheim, CA

Transport of chemical signals within cell filopodia

12/2024 ASCB Cell Bio 2024, San Diego, CA

(*Selected for oral presentation from submitted abstracts).

Vortex-driven chemical species transport near a sharp corner

11/2024 APS DFD Meeting, Salt Lake City, UT

*Rapid, nonlinear diffusiophoretic swelling of chemically responsive hydrogels**

11/2024 APS DFD Meeting, Salt Lake City, UT

07/2024 International Soft Matter Conference 2024, Raleigh, NC

(*Selected for oral presentation from submitted abstracts).

Variational formulation of physics-informed neural networks

03/2025 APS Global Physics Summit, Anaheim, CA

11/2024 APS DFD Meeting, Salt Lake City, UT

(*Selected for the Interact Session from submitted abstracts).

03/2024 APS March Meeting, Minneapolis, MN

Viscoelasticity-driven dynamical shape shifting of soft bilayer strips

03/2024 APS March Meeting, Minneapolis, MI

A multiscale whole-cell theory for cell migration under geometric confinement

03/2023 APS March Meeting, Las Vegas, NV

Osmotic swelling of chemically responsive hydrogels induced by non-uniform chemical signals

03/2023 APS March Meeting, Las Vegas, NV

11/2022 APS DFD Meeting, Indianapolis, IN

Cell spreading and migration on viscoelastic substrates: a chemo-mechanical multiscale model

03/2022 APS March Meeting, Chicago, IL

A geometrical theory for edge-driven growth of thin-walled materials

12/2021 MRS Fall Meeting, Boston, MA

An elastohydrodynamic thin film theory for the onset of compartmentalization of lipid bilayer based model protocells

11/2021 APS DFD Meeting, Phoenix, AZ

A multiphase theory for transient osmotic swelling of chemically responsive hydrogels

11/2021 APS DFD Meeting, Phoenix, AZ

Non-equilibrium signal integration in hydrogels

11/2019 APS DFD Meeting, Seattle, WA

Theory of non-equilibrium signal processing in hydrogels

03/2018 APS March Meeting, Los Angeles, CA

Controlled growth and form of precipitating microsculptures

10/2017 NEW.Mech 2017, MIT

10/2017 19th Greater Boston Area Statistical Mechanics Meeting, MIT

08/2017 26th International Materials Research Congress, Cancun, Mexico

Dynamics of water uptake in spreading bacterial colonies

11/2016 APS DFD Meeting, Portland, OR

Dynamics of clogging in drying porous media

11/2014 APS DFD Meeting, San Francisco, CA

Theory of the dynamics of evaporation-driven colloidal patterning

03/2014 APS March Meeting, Denver, CO

Unified theory of chiral smectic A monolayers and π -wall defects

02/2012 APS March Meeting, Boston, MA

10/2011 13th Greater Boston Area Statistical Mechanics Meeting, Brandeis University

Theory of depletion induced phase transition from chiral smectic A twisted ribbons to semi-infinite flat membranes

11/2010 MRS Fall Meeting, Boston, MA

10/2010 12th Greater Boston Area Statistical Mechanics Meeting, Brandeis University

09/2010 44th New England Complex Fluids Meeting, Brandeis University

05/2010 103rd Statistical Mechanics Meeting, Rutgers University

Theory of liquid crystalline membranes

10/2009 60th Birthday Symposium in Honor of Nihat Berker, MIT

Infinitely robust order and local order-parameter tulips in Apollonian networks with quenched disorder

03/2009 APS March Meeting, Pittsburgh, PA

12/2008 100th Statistical Mechanics Meeting, Rutgers University

Quantum induced asymmetric phase diagrams of spin-glass systems

03/2008 APS March Meeting, New Orleans, LA

12/2007 98th Statistical Mechanics Meeting, Rutgers University

Poster presentations*Polyelectrolyte hydrogel diffusiophoresis*

11/2025 APS DFD Meeting, Houston, TX

(*Selected for the Interact Session from submitted abstracts).

Geometric theory of elastic curves bounded on surfaces

08/2025 Gordon Research Conference for Soft Condensed Matter Physics, New London, NH

Rapid nonlinear hydrogel diffusiophoresis

08/2025 Gordon Research Conference for Soft Condensed Matter Physics, New London, NH

A Nonconvex Neural Network Optimizer for Multiphysics Problems

12/2024 Defense TechConnect, Austin, TX

Transport of chemical signals within cell filopodia

12/2024 ASCB Cell Bio 2024, San Diego, CA

Variational formulation of physics-informed neural networks (vfPINN)

11/2024 APS DFD Meeting, Salt Lake City, UT

(*Selected for the Interact Session from submitted abstracts).

07/2024 International Soft Matter Conference 2024, Raleigh, NC

Chemical species transport near sharp corners

07/2024 International Soft Matter Conference 2024, Raleigh, NC

Impact of confinement and curvature on cell migration: A multiscale modeling approach.

12/2023 ASCB Cell Bio Meeting 2023, Boston, MA

Effects of matrix viscoelasticity and geometrical constraint on cell migrations: A multiscale bio-chemo-mechanical model.

02/2023 67th Biophysical Society Meeting, San Diego, CA

A multiscale whole-cell theory for mechano-sensitive migration on viscoelastic substrates

01/2023 Gordon Research Conference on Directed Cell Migration, Galveston, TX

01/2023 Gordon Research Seminar on Directed Cell Migration, Galveston, TX

12/2022 ASCB Cell Bio Meeting 2022, Washington, DC

A multiphase theory for transient osmotic swelling of chemically responsive hydrogels

03/2022 APS March Meeting, Chicago, IL

A multiscale theory for opposing durotactic regimes in mesenchymal cell migration

12/2021 Cell Bio Virtual Meeting (ASCB& EMBO).

Non-equilibrium signal integration in hydrogels

07/2021 11th Liquid Matter Conference 2020 Prague, Czech Republic.

09/2019 7th Annual Virginia Soft Matter Workshop, University of Virginia

11/2018 Wyss Institute Annual Retreat, Boston, MA

Controlled growth and form of precipitating microsculptures

06/2017 Gordon Research Conference on Crystal Growth, University of New England

11/2016 MRS Fall Meeting, Boston, MA

08/2015 Gordon Conference on Soft Matter, Colby-Sawyer College

Dynamics of evaporative colloidal patterning

11/2014 Wyss Institute Annual Retreat, Boston, MA

01/2014 AFOSR-MURI Annual Review Meeting, Harvard University

Morphogenesis of spinose forms in terrestrial plants

05/2014 9th Annual Plant Biology Symposium, Arnold Arboretum

Chiral smectics A: Isolated membranes versus π -twist-wall defects

06/2011 Gordon Conference on Liquid Crystals, Mount Holyoke College

TEACHING**Instructor**Virginia Tech

Electromagnetism, waves & optics (Physics 2306 - undergraduate level, Fall 2019, Spring 2024-2026)

Soft matter physics (Physics 4724/5724G - conjoined undergraduate & graduate level, Spring 2021, Spring 2022, Fall 2023, Fall 2026)

Methods of theoretical physics (Physics 5714 - graduate level, Fall 2020-2022, Fall 2024)

Contemporary physics (Physics 2074 - taught the soft matter physics module of the 5-module undergraduate level course, Fall 2021)

Harvard University

Patterns in fluids (Applied Math 217 - graduate level, Spring 2019)

Teaching assistantBrandeis University

Introductory physics (Phys 11a – Fall 2008, Phys 11b – Spring 2009)

Graduate statistical physics and thermodynamics, (Phys 163a – Fall 2009, 2011)

Graduate quantum mechanics II, (Phys 162b – Spring 2011)

Feza Gürsey Research Institute, TUBITAK, Turkey

Phase transitions and renormalization group, Summer 2007, 2008

Koç University

Undergraduate statistical physics, (Phys 301 – Fall 2006)

Electricity and magnetism, (Phys 102 – Spring 2007)

Undergraduate solid state physics, (Phys 403 – Fall 2007)

Phase transitions and renormalization group, (Phys 409 – Spring 2008)

Istanbul Technical University

Introductory physics laboratories, 2002-04

ADVISING at Virginia Tech

Postdoctoral researchers

Dr. Wenya Shu, Postdoctoral researcher, 2020-2023

Graduate students

Chinmay Katke, Graduate research assistant, 2021-2025 (Tipsword Graduate Scholarship, 2022)

Fahim bin Selim, Graduate research assistant, 2024-

Undergraduate students

Yukang Zhao, Undergraduate researcher, Spring 2026

Cody Woodson, Undergraduate researcher, Fall 2026

Dillon Luke, Undergraduate researcher, Spring 2026

Ethan Dolin, Undergraduate researcher, Spring 2024

Jesse McGovern, Undergraduate researcher, Summer, Fall 2023

Brady Talbert, Undergraduate researcher, Summer 2022

Bryan Dobbins, Undergraduate researcher, Spring & Summer 2020

Pierce M. Affleck, Undergraduate researcher, Spring 2020

AWARDS

- 2018 Postdoctoral Award for Professional Development, Office of Postdoctoral Affairs, Harvard University
- 2010 The Stephan Berko Prize For Outstanding Graduate Research, Martin Fisher School of Physics, Brandeis University
- 2009 Travel and Research Award, Brandeis University Graduate Student Association (GSA)
- 2008 Travel and Research Award, The Scientific and Technological Research Council of Turkey (TUBITAK)

SERVICE

- Reviewer for *Phys. Rev. Lett.*, *Phys. Rev. E*, *Phys. Rev. Appl.*, *Phys. Rev. Fluids*, *PNAS*, *Nat. Commun.*, *J. Fluid Mech.*, *Biophys J.*, *Soft Matter*, *Front. Cell Dev. Biol.*,
- Co-organizer and instructor of “Squeezing Squishy Stuff” activity at Virginia Tech Summer Camp for middle and high school students (June 2023, June 2024, July 2025, July 2026).
- Co-organizer and instructor of “Squeezing Squishy Stuff” activity at Virginia Tech Teachers’ Workshop (June 2024, July 2025).
- Organizer and instructor of “Design and Math - Tessellations” activity for ages 11-18 at Un-Camp! (Virtual Summer Camp at Virginia Tech for middle and high school students) (July 2020). For more details, click [here](#) or visit the [Youtube channel](#).
- Judge at the Blue Ridge Highlands Science Fair (March 2020, March 2021, March 2022, March 2024), Virginia State Science and Engineering Fair (VSSEF) (April 2020, April 2021), Roanoke Valley Governor’s School Project Forum (March 2021), Southwest Virginia Governor’s School Science Fair (February 2020),
- Organizer of the “Theoretical Mechanobiology from Single Cell to Multicellular Level” subgroup at ASCB Cell Bio 2024,
- Co-organizer of the “Mechanobiology of Cell-Matrix Interactions” focus session at the APS March Meeting 2022 & 2023 & 2024,
- Organizer of the “Physical and Engineering Approaches to Cell Biology” minisymposium at ASCB Cell Bio 2023,
- Co-organizer (with 2 faculty members) of the Center for Soft Matter and Biological Physics Annual Symposium, Virginia Tech (2020-2022),
- Reviewer for the VT Presidential Postdoctoral Fellowship Program (2025).
- Member, Graduate Committee, Department of Physics, Virginia Tech (2019-21),
- Member, Qualifying Exam Committee, Department of Physics, Virginia Tech (2022-),
- Co-organizer (with 2 faculty members, 3 postdocs, and staff) of the 9th Plant Biology Symposium (2014), Arnold Arboretum, Harvard University (100 attendants),
- Co-organizer (with 1 faculty member and staff) of the Annual Retreat (2017), Kavli Institute for Bionano Science & Technology, Harvard University (49 attendants),