Meredith N. Silberstein - CV

Professor
Sibley School of Mechanical and Aerospace Engineering, Cornell University
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Education:

Massachusetts Institute of Technology — Mechanical Engineering — Ph.D., 2011
GPA 5.0/5.0, Minor: Energy
Thesis: Mechanics and Multi-Physics Deformation Behavior of Polymer Electrolyte Membranes.

Massachusetts Institute of Technology — Mechanical Engineering — M.S., 2008
GPA: 5.0/5.0
Thesis: Mechanics of Proton Exchange Membranes: Time, Temperature, and Hydration Dependence of the Stress-Strain Behavior of Persulfonated Polytetrafluoroethylene.

Massachusetts Institute of Technology — Mechanical Engineering — B.S., 2005
GPA: 4.8/5.0, Minor: History
Thesis: Mechanics of Notched Izod Impact Testing of Polycarbonate.

Professional Appointments:

2024-Present	Cornell University, Ithaca, NY
	Professor, Sibley School of Mechanical and Aerospace Engineering
2022-Present	Cornell University, Ithaca, NY
	Director, Engineered Living Materials Institute (https://elmi.cornell.edu)
2018-Present	Cornell University, Ithaca, NY
	Associate Professor, Sibley School of Mechanical and Aerospace Engineering
2013-2018	Cornell University, Ithaca, NY
	Mills Family Assistant Professor, Sibley School of Mechanical and Aerospace Engineering
2011-2012	University of Illinois at Urbana-Champaign, Urbana, Illinois
	Beckman Postdoctoral Fellow, Beckman Institute for Advanced Science and Technology
2006-2011	Massachusetts Institute of Technology, Cambridge, Massachusetts
	Research Assistant, Department of Mechanical Engineering
2005-2006	Northrop Grumman Corporation, Redondo Beach, California
	Opto-mechanical Engineer, Space Technology Division

Honors & Awards:

DARPA Young Investigator Award (2020)
Knauss Young Investigator Award (2020)
AFRL Summer Faculty Fellowship (2019)
Women in Engineering Academic Visitor Grant to University of New South Wales (2019)
DOE Early Career Award (2018)
Sonny Yau '72 Excellence in Teaching Award (2018)
NSF Career Award (2017)
Affinito-Stewart Grant of the President's Council of Cornell Women, Cornell University (2015)
Heténi Award for best research paper published in *Experimental Mechanics* in 2014 (2015)
Haythornthwaite Research Initiation Award from ASME Applied Mechanics Division (2013)
Beckman Postdoctoral Fellowship (2011)
Wunsch Foundation Silent Hoist and Crane Award for Outstanding Teaching (2008)

Honors & Awards to Trainees:

Complex Active and Adaptive Material Systems GRS Best Speaker (2025): Max Tepermeister
CNF Poster competition 1st place (2024): Miranda PJ Brunette
SEM Student Paper competition 3rd place (2024): Ellen van Wijngaarden
Fleming Postdoc Fellowship (2024): Si Chen
Future Faculty Symposium at Society of Engineering Science Annual Conference (2023): Robert Wagner and Si Chen
NSERC Graduate Fellowship (2023): Ellen van Wijngaarden
NSF GFRP Honorable Mention (2023): Bex Pendrak
Aviation Week Network 20 Twenties (2021): Shreya Gowda
Brooke Owens Fellowship (2021): Shreya Gowda
NSF GFRP Honorable Mention (2019): Steven Yang
H.D. Block Teaching Prize (2018-2019): Michael Buche
Francis C. Moon Best Poster Award, Sibley School Graduate Research Symposium (2014): Naigeng Chen

Book Chapters:

1. Silberstein MN and Manivannan MS. "Materials Design Principles for Mechanochemical Transduction", Craig SL and Simon Y (Ed.) Mechanochemistry in Materials, *RSC,* 2017

Refereed Journals:

1. He L, Cai H, Gona RS, Gangan MS, Lai T, Silberstein MN, Meyer AS. 3D-bioprinted marine bacteria for the degradation of bioplastics. On bioRxiv. *Under review*
2. Arias SL, van Wijngaarden EW, Balint D, Jones J, Crawford CC, Shukla PJ, Silberstein MN, Brito IL. Environmental factors drive bacterial degradation of gastrointestinal mucus. On bioRxiv. *Under review*
3. Wang Z, Wagner RJ, Chen T, Shah SP, Maiaru M, Silberstein MN. Bond exchange reactions as a paradigm for mitigating residual stress in polymer matrix fiber composites. *IJSS. In press.*

4. Chen S, Burda I, Jani P, Pendrak B, Silberstein MN, Roeder AHK. Fibrous Network Nature of Plant Cell Walls Enables Tunable Mechanics for Development. On bioRxiv. *Under review*
5. Tepermeister M, Silberstein MN. Conceptualization and Implementation of a Faster Than Real Time Simulation Tool for Ionic Material and System Modeling. On arXiv. *Under review*
6. Cai H, Tepermeister M, Yuan C, Silberstein MN. Regulating hydrogel mechanical properties with an electric field. On chemRxiv. *Under review*
7. Kruzic JJ, Huang Y, Li Z, Ranaweera C, Jayathilaka PB, Islam MS, Ajam A, Silberstein MN, Kilian KA. Stretch activated molecule immobilization in disulfide linked double network hydrogels. *Under review*
8. Chen G, Wang Z, Huang X, Hur D, Pfeifer M, Silberstein MN, Tian Z. Bulk Thermally Conductive Polyethylene as Thermal Interface Materials. *Materials Horizons, 2025, in press*
9. van Wijngaarden EW, Arias SL, Silberstein MN, Brito IL. The Role of Human Intestinal Mucus in the Prevention of Microplastic Uptake and Cell Damage. *Biomaterials Science, 2025, in press*
10. Wagner RJ, Silberstein MN. A foundational framework for the mesoscale modeling of dynamic elastomers and gels. *JMPS.* 2025, 105914
11. van Wijngaarden EW, Goetsch AG, Brito IL, Hershey DM, Silberstein MN. Engineering Bacterial Biomanufacturing: Characterization and Manipulation of Sphingomonas sp. LM7 Extracellular Polymers. *Soft Matter.* 2024*,* ***20****,* 6399-6410
12. Aubrecht FJ, Orme K, Saul A, Cai H, Ranathunge TA, Silberstein MN, McDonald M. Ion-Specific Interactions Engender Dynamic and Tailorable Properties in Biomimetic Cationic Polyelectrolytes. *Angewandte Chemie.* e202408673
13. Zhang H, Zoubi A, Silberstein MN, Diesendruck CE. Mechanochemistry in Block Copolymers: New Scission Site due to Dynamic Phase Separation. *Angewandte Chemie.* 2023, e202314781
14. Yang S, Silberstein MN. Elucidating the impact of microstructure on mechanical properties of phase-segregated polyurea: Finite element modeling of molecular dynamics derived microstructures. *Mechanics of Materials*. 2024, 104863
15. Tepermeister M, Silberstein MN. Modeling the Transient Behavior of Ionic Diodes with the Nernst-Plank-Poisson Equations. *Advanced Sensor Research*. 2023, 2300131.
16. Baker E, Ly K, Bosnjak N, O'Neill MR, Miller R, Li S, Shepherd RF, Silberstein MN Mechanical Properties of Highly Deformable Elastomeric Gyroids for Multifunctional Capacitors. *Advanced Engineering Materials,* 2023, 2300629
17. Kumar RS, Srivasta S, Baker E, Silberstein MN, Selva D. Kumar RS, Srivasta S, Silberstein MN, Selva D. Leveraging Design Heuristics for Multi-Objective Metamaterial Design Optimization, *Journal of Mechanical Design*, 2023, 145 (12)
18. Zhang X, Dai J, Tepermeister M, Deng Y, Yeo J, Silberstein MN. Understanding How Metal-Ligand Coordination Enables Solvent Free Ionic Conductivity in PDMS, *Macromolecules,* 2023, 56, 8, 3119–3131
19. Wang Z, Cai H, Silberstein MN. A constitutive model for elastomers tailored by ionic bonds and entanglements, *Mechanics of Materials,* 2023, 179, 104604
20. Cai H, Wang Z, Utomo NW, Vidavsky Y, Silberstein MN. Highly stretchable ionically crosslinked acrylate elastomers based on polyelectrolyte complexes, *Soft Matter,* 2022, 18, 7679-7688

21. Buche MR, Silberstein MN, Grutzik SJ. On freely-jointed chain models with extensible links, *Physical Review E,* 2022, 106, 024502
22. Bosnjak N, Tepermeister M, Silberstein MN. Modeling coupled electrochemical and mechanical behavior of soft ionic materials and ionotronic devices, *Journal of the Mechanics and Physics of Solids,* 2022, 168, 105014
23. Tepermeister M, Bosnjak N, Dai J, Zhang X, Kielar S, Wang Z, Tian Z, Suntivich J, Silberstein MN. Soft Ionics: Governing Physics and State of Technologies, *Frontiers in Physics*, 2022, 10, 890845
24. Zhang X, Crisci R, Finlay JA, Cai H, Clare AS, Chen Z, Silberstein MN. Enabling Tunable Hydrophilicity of PDMS via Metal-ligand Coordinated Dynamic Networks, *Advanced Materials Interfaces,* 2022, 2200430
25. Srivasta S, Kumar RS, Selva D, Silberstein MN. Examining the Impact of Asymmetry in Lattice-Based Mechanical Metamaterials. *Mechanics of Materials,* 2022, 172, 104386
26. Huang Y, Jayathilaka PB, Islam MS, Tanaka CB, Silberstein MN, Kilian KA, Kruzic JJ. Structural aspects controlling the mechanical and biological properties of tough, double network hydrogels, *Acta Biomaterial*, 2022, 138, 301-312
27. Bosnjak N, Silberstein MN. Pathways to tough yet soft materials, *Science Perspectives*, 2021, 374 (6564), 150-151
28. Buche MR, Silberstein MN. Chain breaking in the statistical mechanical constitutive theory of polymer networks, *Journal of the Mechanics and Physics of Solids,* 2021, 156, 104593
29. Jayathilaka PB, Molley TG, Huang Y, Islam MS, Buche MR, Silberstein MN, Kruzic JJ, Kilian KA. Force-mediated molecule release from double network hydrogels, *ChemComm*, 2021, 57 (68), 8484-8487
30. Li S, Bai H, Liu Z, Zhang X, Huang C, Weisner LW, Silberstein MN, Shepherd RF Digital light processing of liquid crystal elastomers for self-sensing artificial muscles, *Science Advances*, 2021, 7 (30), eabg3677
31. Rosenbloom SI, Yang SJ, Tsakeredes NJ, Fors BP, Silberstein MN. Microstructural evolution of polyurea under hydrostatic pressure, *Polymer*, 2021, 227, 123845
32. Raiter P, Vidavsky Y, Silberstein MN. Can Polyelectrolyte Mechanical Properties Be Directly Modulated By an Electric Field? A Molecular Dynamics Study, *Adv Funct Matl,* 2020, 31, p.2006969
33. Zhang X, Vidavsky Y, Aharonovich S, Yang SJ, Buche MR, Diesendruck CE, Silberstein MN. Bridging experiments and theory: isolating the effects of metal–ligand interactions on viscoelasticity of reversible polymer networks, *Soft Matter,* 2020, 16, p.8591-8601
34. Buche MR, Silberstein MN. Statistical mechanical constitutive theory of polymer networks: The inextricable links between distribution, behavior, and ensemble, *Physical Review E,* 2020, 102, p.012591
35. Lipinski B, Morris L, Silberstein MN, Coates GW. Isotactic Poly(Propylene Oxide): A Photodegradable Polymer with Strain Hardening Properties, *Journal of the American Chemical Society,* 2020, 142, p.6800-6806
36. Vidavsky Y, Buche MR, Sparrow ZM, Zhang X, Yang SJ, DiStasio RA, Silberstein MN. Tuning the Mechanical Properties of Metallopolymers via Ligand Interactions: A Combined Experimental and Theoretical Study, *Macromolecules,* 2020, 53, p.2021-2030
37. Farajollahi S, Dennis PB, Crosby MG, Slocik JM, Pelton AT, Hampton CM, Drummy LF, Yang SJ, Silberstein MN, Gupta MK, Naik RR. Disulfide crosslinked hydrogels made from the Hydra stinging cell protein Minicollagen-1, *Frontiers in Chemistry*, 2020, 7, 950

38. Rosenbloom SI, Gentekos DT, Silberstein MN, Fors BP. Tailor-made thermoplastic elastomers: customizable materials via modulation of molecular weight distributions, *Chemical Science*, 2020,11, 1361-1367
39. Vidavsky Y, Yang SJ, Abel BA, Agami I, Diesendruck CE, Coates GW, Silberstein MN. Enabling Room Temperature Mechanochromic Activation in a Glassy Polymer: Synthesis and Characterization of Spiropyran Polycarbonate, *Journal of the American Chemical Society,* 2019, 141, 10060−10067
40. Galant O, Bae S, Silberstein MN, Diesendruck CE. Highly Stretchable Polymers: Mechanical Properties Improvement by Balancing Intra-and Intermolecular Interactions, *Advanced Functional Materials,* 2019, 1901806
41. Chen N and Silberstein MN. A Micromechanics-Based Damage Model for Non-Woven Fiber Networks, *IJSS,* 2019, 160:18-31
42. Bae S, Galant O, Diesendruck CE, Silberstein MN. The Effect of Intra-chain Crosslinking on the Thermo-mechanical Behavior of Bulk Polymers Assembled Solely from Single Chain Polymer Nanoparticles, *Macromolecules,* 2018, 51:7160-7168
43. Vidavsky Y, Bae S, Silberstein MN. Modulating Metallopolymer Mechanical Properties by Controlling Metal Ligand Crosslinking, *Journal of Polymer Science Part C,* 2018, 56:1117-1122
44. Manivannan MS and Silberstein MN. Theoretical framework and design of mechanochemically augmented polymer composites, *Extreme Mechanics Letter,* 2018, 19:27-38
45. An D, Flanders J, Song W, Shou D, Lu Y, Grunnet LG, Winkel L, Ingvorsen C, Christophersen NC, Sand FW, Luo D, Silberstein MN, Fan J, Ma M. Designing a scalable and retrievable cell encapsulation device for treatment of type 1 diabetes, *PNAS,* 2018, 115:E262-E272
46. Chen N and Silberstein MN. Determination of Bond Strengths in Non-woven Fabrics: A Combined Experimental and Computational Approach, *Experimental Mechanics*, 2018, 58:343-355
47. Galant O, Bae S, Silberstein MN, Diesendruck CE. Mechanical and Thermomechanical Characterization of Glassy Thermoplastics with Intrachain Cross-links, *Macromolecules,* 2017, 50:6415-6420
48. Mac Murray BC, Futran CC, Lee J, O'Brien KW, Amirimoghadam A, Mosadegh B, Silberstein MN, Min JK, Shepherd RF. Compliant Buckled Foam Actuators and Application to Patient-Specific Direct Cardiac Compression Devices, *Soft Robotics,* 2018, 5:99-108
49. Bae S, Galant O, Diesendruck CE, Silberstein MN. Tailoring Single Chain Polymer Nanoparticle Thermo-Mechanical Behavior by Cross-link Density, *Soft Matter,* 2017,13:2808-2816
50. Lee J, Silberstein MN, Abdeen AA, Kim SY, Kilian KA. Mechanochemical functionalization of disulfide linked hydrogels, *Materials Horizons,* 2016, 3:447-451, doi: 10.1039/c6mh00091f
51. Chen N, Koker MKA, Uzun S, and Silberstein MN. In-situ X-ray Study of the Deformation Mechanisms of Nonwoven Polypropylene, *IJSS,* 2016:97-98;200-208
52. Van Meerbeek IM, Mac Murray BC, Kim JW, Robinson SS, Zou PX, Silberstein MN, Shepherd RF. Morphing Metal and Elastomer Bicontinuous Foams with Reversible Stiffness, Shape Memory, and Self Healing, *Advanced Materials,* 2016, 28 (14), 2801-2806

53. Manivannan MS and Silberstein MN. Computational Investigation of Shear Driven Mechanophore Activation at Interfaces, *Extreme Mechanics Letters,* 2016, 8:6-12 doi: 10.1016/j.eml.2015.10.003
54. Kim JW, Jung Y, Coates GC, Silberstein MN. Mechano-Activation of Spiropyran Covalently Linked PMMA: Effect of Temperature, Strain Rate and Deformation Mode, *Macromolecules*, 2015:48;1335-1342
55. Jones EJ, Silberstein MN, White SR, Sottos NR. In Situ Measurements of Strains in Composite Battery Electrodes During Electrochemical Cycling, *Experimental Mechanics***,** 2014:54;971-985
56. Min KM, Silberstein MN, Aluru NR. Crosslinking PMMA: Molecular Dynamics Investigation of the Shear Response, *Journal of Polymer Science Part B: Polymer Physics,* 2014:52;444-449.
57. Silberstein MN, Cremar LD, Beiermann BA, Kramer SB, Moore JS, Martinez TD, White SR, Sottos NR. Modeling Mechanophore Activation within a Viscous Rubbery Network, *Journal of the Mechanics and Physics of Solids*, 2014:63;141-153
58. Silberstein MN, Min K, Cremar LD, Degen CM, Martinez TD, Aluru N, White SR, Sottos NR. Modeling Mechanophore Activation within a Crosslinked Glassy Matrix, *Journal of Applied Physics*, 2013:2;023504-1-9.
59. Lee CK, Beiermann BA, Silberstein MN, Wang J, Moore JS, Sottos NR, Braun PV. Exploiting Force Sensitive Spiropyrans as Molecular Level Probes, *Macromolecules* 2013:46;3746-3752.
60. Diesendruck CE, Steinberg BD, Sugai N, Silberstein MN, Sottos NR, White SR, Braun PV, Moore JS. Proton-Coupled Mechanochemical Transduction: A Mechanogenerated Acid, *Journal of the American Chemical Society,* 2012:134;12446-12449.
61. Liu DS, Ashcraft JN, Mannarino MM, Silberstein MN, Argun AA, Rutledge GC, Boyce MC, Hammond PT. Spray Layer-By-Layer Electrospun Composite Proton Exchange Membranes, *Adv Func Mat* 2012: 10.1002/adfm.201202892.
62. Silberstein MN, Pai CL, Rutledge GC, Boyce MC. Elastic-Plastic Behavior of Non-Woven Fibrous Mats, *Journal of the Mechanics and Physics of Solids,* 2012:60;295-318.
63. Silberstein MN, Boyce MC. Hygro-Thermal Mechanical Behavior of Nafion During Constrained Swelling, *J Pwr Sources* 2011:196;3452-3460.
64. Silberstein MN, Pillai PV, Boyce MC. Biaxial Elastic-Viscoplastic Behavior of Nafion Membranes, *Polymer* 2011:52;529-539.
65. Silberstein MN, Boyce MC. Constitutive Modeling of the Rate, Temperature, and Hydration Dependent Deformation Response of Nafion to Monotonic and Cyclic Loading, *J Pwr Sources* 2010:195;5692-5706.

Refereed Conference Proceedings:

1. Kumar RS, Srivasta S, Silberstein MN, Selva D. Leveraging Design Heuristics for Multi-Objective Metamaterial Design Optimization, *IDETC/CIE*. 2021
2. Ramming C, Papadopoulos C, Davishahl E, Self BP, MacNamara SC, Silberstein MN, and Dannenhoffer JV. Large Scale Development and Deployment of Concept Questions in Statics, *ASEE Annual Conference*. 2020
3. Ritz H, Silberstein MN, Andarawis-Puri N. Uniaxial tension testing lab: fewer instructions for better results?, *ASEE Annual Conference. 2018*

Current Support:

8/15/2024-8/14/2026	$700K	*Transient Microstructures Inspired by Mycorrhizal Fungi Arbuscules* Department of Energy, BES, Biomolecular Materials Program PI
9/1/2024-8/31/2027	$315K	Collaborative Research: Mechanics of Elastomers Tailored by Cation-Pi Interactions Cornell PI, collaborative with Ben McDonald
8/1/2024-5/31/2029	$1.5M	*Mitigating Fatigue Crack Growth with Engineered Bacteria* ONR PI

Past Support:

11/15/2021-11/14/2024	$450K	*Dynamic Chemistry for Resin Transfer Molding Composites* AFOSR, Aerospace Composites Program PI
9/1/2018-8/31/2024	$750K	*Bio-inspired Polymer Membranes for Resilience of Electrochemical Energy Devices* Department of Energy, BES, Biomolecular Materials Program PI
8/1/2022-7/31/2024	$160K	*Engineered Living Materials for Indoor Air Quality Control* Cornell Atkinson Venture Fund Co-PI ($10k to Silberstein)
9/1/2023-6/30/2024	$37.5K	*Developing a Suite of Replenishable, Biologically Relevant Models of Human Intestinal Mucus* Cornell College of Engineering Sprout Award Co-PI (supporting a co-advised student)
6/1/2017-5/31/2023	$500K	*CAREER: Building a mechanistic understanding of mechanochemically adaptive polymers.* National Science Foundation, ENG, CMMI PI
9/13/2020-12/12/2022	$500K	*Theory and Realization of Bioinspired Polyelectrolyte-Based Soft Matter Circuits* DARPA YFA PI

9/1/2018-8/31/2022	$297K	*Collaborative: Knowledge and Data-Driven Design of Mechanical Metamaterials* National Science Foundation, ENG, EDSE PI
3/1/2019-2/28/2022	$497K	*Tailoring Dynamic Bonding in High Strain Rate Elastomeric Polymers for Blast Protection* Office of Naval Research, 332, Alternative Hull Materials and Concepts Program PI
9/15/2017-9/15/2021	$420K	*Mechanoresponsive anti-fouling polymers based on unveiling functional cross-links* Office of Naval Research, 332, Antifouling/Fouling Release Coatings Program PI
6/1/2013-5/31/2017	~$300K (1 student)	*In-situ imaging of non-woven materials*. Cornell High Energy Synchrotron Source. PI
8/15/2013-8/15/2017	$225K	*Mechanochemically based sustainable polymers.* National Science Foundation Division of Materials Research subcontract through University of Illinois co-PI (total grant $800K)
9/1/2015-1/1/2017	CPUs worth $20,818	*Molecular simulations of tailored polymers and interfaces* National Science Foundation XSEDE PI
1/1/2016-12/31/2016	$45,000	*ENGRD2020 Revamping* Cornell Internal, James McCormick Family Teaching Excellence Institute PI
7/1/2015-12/31/2015	$9,495	*Nonwoven bond mechanical characterization* Affinito-Stewart of the Cornell President's Council of Cornell Women PI
11/1/2013-11/1/2014	$20K	*Mechanochemically active polymers: development and validation of theory.* American Society of Mechanical Engineers Applied Mechanics Division

PI

4/1/2014-8/31/2015	CPUs worth $58,306	*Molecular dynamics simulations of polymers and interfaces for design of mechanochemically responsive materials* National Science Foundation XSEDE PI

Keynotes / Plenary talks:

1. International Conference on Mechanics of Time Dependent Materials. "Time Dependent Mechanics of Polymers Crosslinked through Charged Interactions" (Dallas, TX, September 2022)

Invited Presentations:

2. Cornell CCMR Members Meeting. "Engineered Living Materials: Using Bioengineering to Achieve Materials of Enhanced Functionality and Sustainability" (Ithaca, NY, January 2025)
3. American Institute of Chemical Engineers (AICHE) "Polysaccharide Fibers As Living and Non-Living Material Building Blocks" (San Diego, CA, October 2024)
4. Monie Ferst Award Symposium for Mary C. Boyce "Leaf Mechanics" (Atlanta, GA, October 2024)
5. Symposium for the 2024 Benjamin Franklin Medalist in Mechanical Engineering "Coupling Mechanics, Chemistry, and Biology to Understand and Control Polymer Functionality" (Philadelphia, PA, April 2024)
6. CINT at Sandia National Lab Seminar "Coupling Mechanics, Chemistry, and Biology" (Albuquerque, NM, January 2024)
7. ACS Fall Congress Polymeric Materials: From Synthesis to Application: USA-Israel Joint Symposium "Soft ionic materials and devices" (San Francisco, CA, August 2023)
8. ACS Fall Congress Polymer Mechanochemistry Symposium "Physics-based modeling of mechanochemically-responsive polymer networks" (San Francisco, CA, August 2023)
9. NASA Ames Research Center Bio and Bio-Inspired Technologies group. "Enhancing Materials Through Bioengineering: Perspective from a Polymer Engineer" (Mountainview, CA, August 2023)
10. MRS Spring Conference Engineered Living Materials Symposium. "Manipulating Growth and Mechanical Properties of Plants with Genetic Engineering" (San Francisco, CA, April 2023)
11. ACS Spring Congress Dynamically Bonded Materials: Advances in Synthesis, Characterization, and Application "Dynamic Metal-Ligand Coordination Bonds to Enable Adaptive Elastomers" (Indianapolis, IN March 2023)
12. M.I.T. Department of Mechanical Engineering "Coupling Mechanics, Chemistry, and Biology" (Cambridge, MA, February 2023)
13. Northern Arizona University Mechanical Engineering Department Colloquium "Coupling Mechanics, Chemistry, and Biology" (virtual, January 2023)
14. Northwestern University Materials Science and Engineering Department Colloquium "Tailoring Elastomers Through Metal-Ligand Interactions" (Evanston, IL, November 2022)

15. Society for Engineering Science (SES), “Soft Ionic Materials and Devices: Experiments, Equivalent Circuits, and Continuum Modeling” (College Station, TX, October 2022)
16. Society for Engineering Science (SES), “Responsive Polymers Enabled through Metal-ligand Coordination Bonding” (College Station, TX, October 2022)
17. Cornell Plant Biology Section Seminar, “Coupling Mechanics, Chemistry, and Biology” (Ithaca, NY September 2022)
18. CU Boulder Workshop of Soft and Active Matter Mechanics. “Elastomers with Reversible and Irreversible Crosslinks” (Virtual, April 2021)
19. Cornell Additive Manufacturing and Materials Industry Day “Mechanical Metamaterials – Designing Material Properties at the Mesoscale Using AM” (Ithaca, NY, April 2021)
20. MRS Fall Conference. “Modulating Polyelectrolyte Mechanical Properties with Electric Fields” (Boston, MA, November 2021)
21. Brown University Materials and Solid Mechanics Seminar “Understanding Elastomers with Tailored Crosslinks” (Virtual, June 2021)
22. Cornell High Energy Synchrotron Source Weekly Staff Meeting “Tuning Polyurea with Metal-Coordination Bonds” (Virtual, April 2021)
23. ACS Spring Congress Fundamentals of Polymer Mechanics Symposium “Mechanical properties of metallopolymers: A combined experimental and theoretical study” (Virtual, April 2021)
24. ACS Spring Congress Macromolecular Materials for Structural Applications Symposium “Understanding and improving polyurea” (Virtual, April 2021)
25. University of Washington Materials Science and Engineering Colloquium “Adventures with Metal Coordination Bonds to Manipulate Polymer Mechanical Properties” (Virtual, March 2021)
26. Polymer Physics GRC Sustainable Polymers Online Symposium “Metal-Coordination Complex Crosslinkers for Reversible Control of Polymer Mechanical Properties” (Virtual, October 2020)
27. 3M, “Adventures in Manipulating Polymer Mechanical Properties with Metal Coordination Bonds” (Virtual, September 2020)
28. ETH, Civil Engineering Structures Group, “Tailoring Polymers for Lifecycle Management” (Zurich, Switzerland, November 2019)
29. Exxon-Mobil Research, “Mechanics and Chemistry in Designing Polymers” (Clinton, NJ, September 2019)
30. Air Force Research Laboratory Composites Performance Group “Nano-Structuring of Bulk Polymers with Intramolecular Crosslinking” (Dayton, OH, July 2019)
31. Air Force Research Laboratory Soft Matter Materials Branch “Mechanochemistry in Designing Polymers” (Dayton, OH, July 2019)
32. CalTech, Civil and Mechanical Engineering Colloquium “Mechanics and Chemistry of Polymers” (Pasadena, CA, October 2018)
33. RPI Mechanical, Aerospace, and Nuclear Engineering Colloquium “Experimental and Computational Mechanics of Nonwovens” (Troy, NY, April 2018)
34. Air Force Research Laboratory Functional Materials Division “Mechanics for Polymer Design” (Dayton, OH, February 2018)
35. MIT Program in Polymers and Soft Matter Colloquium “Mechanics and Chemistry in Designing Polymers” (Cambridge, MA, February 2018)

36. Northwestern University Mechanical Engineering Department Colloquium “Mechanics and Chemistry in Designing Polymers” (Evanston, IL, January 2018)
37. North Carolina State University Mechanical and Aerospace Engineering Department Colloquium “Experimental and Computational Mechanics of Nonwovens” (Raleigh, NC, January 2018)
38. University of Texas Austin Aerospace Engineering and Engineering Mechanics Department Colloquium “Mechanics and Chemistry in Designing Polymers” (Austin, TX, May 2017)
39. Michigan Technological University Department of Mechanical Engineering – Engineering Mechanics “Mechanics and Chemistry in Designing Polymers” (Houghton, MI, April 2017)
40. Washington University Department of Mechanical Engineering and Materials Science “Mechanics and Chemistry in Designing Polymers” (St. Louis, MO, April 2017)
41. Ben Gurion Mechanical Engineering Department Colloquium “Mechanics and Chemistry in Designing Polymers” (Beer Sheva, Israel, March 2017)
42. The Technion Mechanical Engineering Department Colloquium “Mechanics and Chemistry in Designing Polymers” (Haifa, Israel, March 2017)
43. Johns Hopkins Mechanical Engineering Department Colloquium “Mechanics and Chemistry in Designing Polymers” (Baltimore, MD, February 2017)
44. New Jersey Institute of Technology Mechanical Engineering Department Colloquium “Mechanics and Chemistry in Designing Polymers” (Newark, NJ, February 2017)
45. Georgia Tech Mechanics and Materials Seminar “Mechanics and Chemistry in Designing Polymers” (Atlanta, GA, January 2017)
46. US-Japan Materials and Mechanics Symposium “Modeling Mechanochemically Responsive Elastomers” (Stony Brook, NY, August 2016)
47. University of Michigan Department of Materials Science and Engineering “Understanding and Designing Mechanochemically-Based Functionality in Polymers and at Interfaces” (Ann Arbor, MI, November 2015)
48. M.I.T. Department of Mechanical Engineering “The Mechanics of Mechanochemistry in Polymers” (Cambridge, MA, March 2015)
49. Proctor & Gamble “Nonwoven Mechanics: Microstructure-Based Modeling and Experimental Validation” (Cincinnati, OH, November, 2014)
50. South Dakota School of Mines and Technology Mechanical Engineering Department Colloquium “The Cornell Synchrotron and Nonwoven Mechanics” (Rapid City, SD, April 2014)
51. Cornell University Fiber Sciences and Design Colloquium “Nonwoven mechanics: Microstructure-based modeling and experimental validation” (Ithaca, NY, February 2014)
52. Harvard University School of Engineering and Applied Sciences Applied Mechanics Colloquium “Designing Mechanochemically Responsive Materials” (Cambridge, MA, November 2013)
53. Syracuse University Mechanical and Aerospace Engineering Department Colloquium “Designing Mechanochemically Adaptive Materials” (Syracuse, NY, October 2013)
54. M.I.T. Conference on Computational Fluid and Solid Mechanics “Probing Polymer Mechanics with Covalently Bonded Mechanochromic Units” (Cambridge, MA. June 2013)
55. Cornell University Materials Science and Engineering Department Colloquium “Synthetic mechanotransduction: Designing Mechanochemical Response in Solid State Polymers” (Ithaca, NY, February 2013)

Oral Presentations:

1. Society for Experimental Mechanics Annual Conference (SEM), "Measuring the Mechanical Properties of Leaves" (Vancouver, WA. June 2024)
2. Society for Experimental Mechanics Annual Conference (SEM), "Experimental Characterization and Constitutive Modeling of Highly Deformable, Environmentally Responsive, Polyelectrolytes" (Orlando, FL. June 2023)
3. United States National Congress of Theoretical and Applied Mechanics (USNCTAM), "Design of Highly Deformable, Environmentally Responsive, Polyelectrolytes." (Austin, TX. June 2022)
4. Society for Experimental Mechanics Annual Conference (SEM), "Dynamically Restructuring PDMS" (Pittsburgh, PA. June 2022)
5. Society for Experimental Mechanics Annual Conference (SEM), "Design and Mechanics of 3D Printed Elastomeric Mechanical Metamaterials" (online. June 2021)
6. Society for Engineering Science (SES), "Microstructural Damage and Recovery of Polyurea under High Pressure." (online. November 2020)
7. Society for Experimental Mechanics Annual Conference (SEM), "Rheology and Mechanics of Metal Coordination Bonded Unentangled Polymer Melts" (online. September 2020)
8. Society for Engineering Science (SES), "Single Chain Polymer Nanoparticle Assemblies – Manipulating Bulk Polymer Properties by Tailoring Intra and Intermolecular Interactions." (St. Louis, MO. October 2019)
9. Multiscale Mechanochemistry and Mechanobiology Symposium "Mechanochromic activation in glassy polymers: Synthesis and activation of spiropyran polycarbonate." (Montreal, CA. July 2019)
10. Society for Experimental Mechanics Annual Conference (SEM), "Modulating Elastomer Strength and Toughness with Metal Ligand Cross-linking" (Reno, NV. June 2019)
11. Multiscale Materials Modeling (MMM) "Modulating Polymer Strength and Toughness with Metal Ligand Crosslinking" (Osaka, Japan. November 2018)
12. World Congress in Computational Mechanics (WCCM), "A Computational Investigation of Composites Augmented by Interfacially Bonded Mechanophores" (NY, NY. July 2018)
13. Society for Experimental Mechanics Annual Conference (SEM), "Bond Strength in Nonwoven Mechanics" (Greenville, SC. June 2018)
14. Multiscale Mechanochemistry and Mechanobiology "Modulating Elastomer Strength and Toughness with Metal Ligand Cross-linking." (Berlin, Germany. October 2017)
15. Society for Engineering Science (SES), "A Computational Investigation of Composites Augmented by Interfacially Bonded Mechanophores." (Boston, MA. July 2017)
16. Society for Experimental Mechanics Annual Conference (SEM), "Thermomechanics of Single Chain Polymer Nanoparticles." (Indianapolis, IN. June 2017)
17. International Congress of Theoretical and Applied Mechanics (ICTAM) "Modeling Mechanochemically Responsive Elastomers." (Montreal, CA. August 2016)
18. Society for Experimental Mechanics Annual Conference (SEM), "Microstructure-Based Mechanical Response of Polymeric Nonwovens." (Orlando, FL. June 2016)
19. Society for Engineering Science (SES), "In-situ microCT and x-ray diffraction of a polypropylene nonwoven under tension." (College Station, TX. October 2015)
20. Society for Engineering Science (SES), "Mechanoresponsive Glassy Polymers: Time, Temperature, and Loading Mode Dependence." (College Station, TX. October 2015)

21. Applied Mechanics and Materials Conference (ASME), “Design of Mechanochemically Active Interfaces.” (Seattle, WA. June 2015)
22. International Conference on Self-Healing Materials “Mechanochemistry in Glassy Polymers: Experiments and Simulations on Spiropyran-linked Poly(methyl methacrylate).” (Durham, NC. June 2015)
23. Society for Experimental Mechanics Annual Conference (SEM), “Mechanoresponsive Glassy Polymers: Time, Temperature, and Loading Mode Dependence.” (Costa Mesa, CA. June 2015)
24. International Mechanical Engineering Congress (ASME), “ Multiscale Modeling of Mechanoresponsive Glassy Polymers.” (Montreal, Canada. November 2014)
25. United States National Congress of Theoretical and Applied Mechanics (USNCTAM), “Multiscale Modeling of Mechanoresponsive Glassy Polymers.” (Lansing, MI. June 2014)
26. Society for Experimental Mechanics Annual Conference (SEM), “Non-woven Mechanics: Microstructure-based Modeling and Validation.” (Greenville, SC. June 2014)
27. International Mechanical Engineering Congress (ASME), “ Generalizing Polymer Nonwoven Mechanics.” (San Diego, CA. November 2013)
28. International Conference on Self-Healing Materials “Computational Predictions of Mechanochemically Based Self-Reinforcing Elastomers” (Ghent, Belgium. June 2013)
29. American Physical Society March Meeting (APS) “Role of Inhomogeneity in Mechanochemically Active Polymers ” (Baltimore, MD. March 2013)
30. International Congress of Theoretical and Applied Mechanics (ICTAM) “Understanding Mechanoresponsive Polymers via Microstructurally-based models.” (Beijing, China. August 2012)
31. European Solid Mechanics Conference (ESMC) “Multiscale Modeling of Mechanoresponsive Polymers.” (Graz, Austria. July 2012)
32. Society for Experimental Mechanics Annual Conference (SEM), “Multiscale Modeling of Mechanoresponsive Polymers.” (Costa Mesa, CA. June 2012)
33. International Mechanical Engineering Congress (ASME), “Mechanics of Layer-by-Layer Coated Electrospun Nanofiber Mats for Fuel Cell Polymer Electrolyte Membranes.” (Denver, CO. November 2011)
34. Society for Experimental Mechanics Annual Conference (SEM), “Microstructural Evolution of Nafion During Uniaxial Deformation Monitored by X-ray Scattering.” (Montville, CT. June 2011)
35. United States National Congress of Theoretical and Applied Mechanics (USNCTAM), “Micromechanical Modeling of Porous Electrospun Nanofiber Mats.” (State College, PA. June 2010)
36. Society for Experimental Mechanics Annual Conference (SEM), “Mechanics of Persulfonated Polytetrafluoroethylene Proton Exchange Membranes.” (Indianapolis, IN. June 2010)
37. International Congress of Theoretical and Applied Mechanics (ICTAM) “Micromechanics of Deformation of Nafion Proton Exchange Membranes.” (Adelaide, Australia. August 2008)

Poster Presentations:

1. Engineered Living Materials International Conference “Growth, Manipulation, and Characterization of Bacterial Polysaccharides” (Saarbruken, Germany September 2024)
2. Synthetic Biology Gordon Research Conference “Measuring and Engineering Plant

Mechanics for Living Materials" (Newry, ME July 2023)
3. Microbial Stress Gordon Research Conference "Metallopolymers with Adaptive Surfaces" (South Hadley, MA July 2022)
4. Society for Engineering Science (SES) "Synthesis and Characterization of Mechanochromic Polycarbonate" (St. Louis, MO October 2019)
5. High Energy X-ray Diffraction Workshop (HEXD-MM) "Connecting the Uniaxial Stress-Strain Behavior of Sulfonated Polytetrafluoroethylene (Nafion) to its Microstructural Evolution" (Argonne, IL. October 2011)
6. Materials Research Society Fall Conference (MRS) "Micromechanical Modeling of Electrospun Nanofiber Mats." (Boston, MA. December 2009)
7. Gordon Research Conference for Fuel Cells (GRCFC) "Constitutive Modeling of Rate, Temperature, and Hydration Dependent Finite Strain Behavior of Nafion." (Smithfield, RI. July 2007)

Oral Presentations by Students and Postdocs:

1. Van Winjgaarden E. Society of Experimental Mechanics (SEM), "Engineering Bacterial Polymers for Biomanufacturing: Characterization of a Novel Polysaccharide" (Vancouver, WA. June 2024)
2. Wang Z. Society of Experimental Mechanics (SEM), "Bond Exchange Reactions to Mitigate Residual Stress in Polymer Composites" (Vancouver, WA. June 2024).
3. Chen Si. Society for Engineering Science (SES), "Explore plant mechanics using micro-mechanical tensile stage coupled with confocal microscopy" (Minneapolis, MN. October 2023)
4. Wang Z. Society for Engineering Science (SES), "A constitutive model for elastomers tailored by ionic bonds and entanglements" (Minneapolis, MN. October 2023)
5. Wagner R. Society for Engineering Science (SES), "A physically motivated mesoscale approach for the mechanical exploration of dynamic elastomers and gels." (Minneapolis, MN. October 2023)
6. Tepermeister M. Society for Engineering Science (SES), "Ionic Diodes: Improving Rectification by Understanding Internal Mechanisms" (Minneapolis, MN. October 2023)
7. Wang Z. International Mechanical Engineering Congress (ASME), "A Constitutive Model for Ionically Bonded and Entangled Bulk Polyelectrolytes" (Columbus, OH. October 2022)
8. Tepermeister. International Mechanical Engineering Congress (ASME), "Characterizing the Role of Ionic Diode Boundary Conditions in Performance" (Columbus, OH. October 2022)
9. Dai J. International Mechanical Engineering Congress (ASME), "Molecular dynamics simulation of metal-ligand coordinated poly(dimethylsiloxane)" (Columbus, OH. October 2022)
10. Yang S. Multiscale Materials Modeling International Conference (MMM) "Relating polyurea microstructure to mechanical behavior by modeling domains as explicit geometries in finite element simulations" (Baltimore, MD. October 2022)
11. Cai H. ACS Northeast Regional Meeting (NERM) "Highly Stretchable Elastomers Based On Ionically-Bonded Networks" (Rochester, NY October 2022)
12. Bosnjak N. United States National Congress of Theoretical and Applied Mechanics (USNCTAM), "Multiphysics modeling of soft ionic conductors and ionotronic devices." (Austin, TX. June 2022)

13. Srivatsa S. United States National Congress of Theoretical and Applied Mechanics (USNCTAM), “Exploring the Utility of Asymmetry in Lattice Metamaterials.” (Austin, TX. June 2022)
14. Zhang X. Materials Research Society Fall Conference (MRS), “Dynamic Metal-Ligand Coordinated PDMS with Tunable Surface Hydrophilicity.” (Boston, MA. December 2021)
15. Bosnjak N. Materials Research Society Fall Conference (MRS), “Multiphysics modeling of ionically conductive hydrogels.” (Boston, MA. December 2021)
16. Cai H. Materials Research Society Fall Conference (MRS), “The mechanical study of polyelectrolyte complexes with copolymers.” (Boston, MA. December 2021)
17. Zhang X. Cornell Soft Matter Seminar Series, “Dynamic Metal-Ligand Coordinated PDMS with Tunable Hydrophilicity.” (Ithaca, NY. October 2021)
18. Zhang X. Cornell Material Science and Engineering 6th Annual Graduate Research Symposium, “Dynamic PDMS Networks with Tunable Hydrophilicity via Metal-ligand Coordination.” (Ithaca, NY. August 2021)
19. Yang S. Society for Engineering Science (SES), “Enabling Mechano-Responsive Functionality in a Glassy Polymer.” (St. Louis, MO. October 2019)
20. Buche M. Society for Engineering Science (SES), “A Quantum Chemistry Simulation Strategy for the Modeling of Dynamic Network Polymers.” (St. Louis, MO October 2019)
21. Zhang J. American Physical Society March Meeting (APS), “The Dynamics of Bulk Polymers with Metal-ligand Coordination Crosslinking” (Boston, MA. March 2019)
22. Yang S. American Physical Society March Meeting (APS), “Mechanochromic Polycarbonate: Seeing Plasticity with Color” (Boston, MA. March 2019)
23. Buche M. American Physical Society March Meeting (APS), “Quantum Chemistry Simulations for Dynamic Network Polymers” (Boston, MA. March 2019)
24. Bae S. World Congress in Computational Mechanics (WCCM), “Single Chain Polymer Nanoparticles as Building Blocks for A New Class of Polymers” (NY, NY. July 2018)
25. Vidavsky Y. American Chemical Society Annual Fall Conference (ACS) “Response of copper carboxylate cross-linked polymer to mechanical stress” (Washington DC. August 2017)
26. Chen NC. Society for Experimental Mechanics Annual Conference (SEM) “Experimental Determination of Bond Strength in Non-woven Fabrics” (Indianapolis, IN. June 2017)
27. Manivannan MS and Silberstein MN. Society for Engineering Science (SES) “Interfacially bonded mechanophores in polymer composites.” (Baltimore, MD. October 2016)
28. Chen NC and Silberstein MN. International Congress of Theoretical and Applied Mechanics (ICTAM) “Experimental Determination of Non-woven Bond Strength Distributions.” (Montreal, CA. August 2016)
29. Manivannan MS and Silberstein MN. International Conference on Self-Healing Materials “Design of Mechanochemically Active Interfaces.” (Durham, NC. June 2015)
30. Manivannan MS and Silberstein MN. SIGMA Seminar Series “Designing Mechanochemically Active Interfaces.” (Ithaca, NY. November 2015)
31. Chen NC, Koker, MKA, and Silberstein MN. New England Workshop on Mechanics of Materials and Structures (NEW.Mech), “Imaging Non-woven Microstructure Evolution During Mechanical Deformation.” (Amherst, MA. October 2014)
32. Chen NC, Koker, MKA, and Silberstein MN. United States National Congress of Theoretical and Applied Mechanics (USNCTAM), “Effect of microstructure on the mechanical properties of polypropylene non-woven fabrics.” (Lansing, MI. June 2014)

33. Manivannan MS and Silberstein MN. United States National Congress of Theoretical and Applied Mechanics (USNCTAM), "Modeling Mechanophore Activation at Interfaces Subjected to Shear." (Lansing, MI. June 2014)
34. Chen NC, Koker, MKA, and Silberstein MN. Sibley Graduate Research Symposium (SGRS), "Relationship between Microstructure and Mechanical Behavior of Polypropylene Non-woven Fabrics." (Ithaca, NY. March 2014)

Poster Presentations by Students and Postdocs:

1. Brunette M. CNF Annual Symposium "Improving the Mechanical and Thermal Properties of Bacterial Polysaccharides." (Ithaca, NY. September 2024)
2. Wagner R. Society for Engineering Science (SES) Future Faculty Symposium, "A physically motivated mesoscale approach for the mechanical exploration of dynamic elastomers and gels." (Minneapolis, MN. October 2023)
3. Chen Si. Society for Engineering Science (SES) Future Faculty Symposium, "Explore plant mechanics using micro-mechanical tensile stage coupled with confocal microscopy" (Minneapolis, MN. October 2023)
4. Bosnjak N, Tepermeister M, Cai H, and Silberstein MN. Society for Engineering Science (SES), "Multiphysics Modeling of Soft Ionic Conductors." (Online, Oct 2021)
5. Zhang X, Crisci R, Finlay J, Cai H, Clare T, Chen Z, and Silberstein MN. Duke Soft Matter Symposium. "Dynamic PDMS Networks with Tunable Hydrophilicity via Metal-ligand Coordination" (Online, October 2021)
6. Srivasta S, Kumar RS, Selva D, Silberstein MN. Society for Engineering Science (SES), "Exploring the Material Property Space of Asymmetric Lattice Metamaterials." (Online, Oct 2021)
7. Zhang X, Crisci R, Finlay J, Cai H, Clare T, Chen Z, and Silberstein MN. MechanoChemBio 2021 - Multiscale Mechanochemistry & Mechanobiology "Dynamic PDMS Networks with Tunable Hydrophilicity via Metal-ligand Coordination" (Online, August 2021)
8. Zhang X, Crisci R, Finlay J, Cai H, Clare T, Chen Z, and Silberstein MN. Cornell Center for Materials Research Symposium - High Performance Soft Materials "Dynamic PDMS Networks with Tunable Hydrophilicity via Metal-ligand Coordination" (Online, June 2021)
9. Yang S, Vidavsky Y, Abel B, Diesendruck C, Coates G, and Silberstein MN. Multiscale Mechanochemistry and Mechanobiology, "Synthesis and Characterization of Mechanochromic Polycarbonate" (Montreal, CA July 2019)
10. Buche M, Vidavsky Y, Distasio R, and Silberstein MN. Multiscale Mechanochemistry and Mechanobiology, "A Quantum Chemistry Simulation Strategy for Dynamic Network Polymers" (Montreal, CA July 2019)
11. Zhang X, Vidavsky Y and Silberstein MN. Multiscale Mechanochemistry and Mechanobiology, "Dynamics of Metal-Ligand Coordination in Bulk Polymers: Experimental and Theoretical Study" (Montreal, CA July 2019)
12. Vidavsky Y, Bae S and Silberstein MN. Polymer Physics Gordon Research Conference, "Modulating the Mechanochemical Response of Metal Crosslinked Polymers" (South Hadley, MA July 2018)
13. Chen NC and Silberstein MN. CHESS User Meeting, "Microstructure and Mechanical Behavior of Non-woven Fabrics." (Ithaca, NY. June 2017)

14. Bae S, Galant O, Diesendruk CE, and Silberstein MN. International Congress of Theoretical and Applied Mechanics (ICTAM) "Molecular dynamics investigation of single chain polymer nanoparticle." (Montreal, CA. August 2016)
15. Chen NC, Koker, MKA, and Silberstein MN. CHESS User Meeting, "Microstructure and Mechanical Behavior of Non-woven Fabrics." (Ithaca, NY. June 2015)
16. Manivannan MS and Silberstein MN. Sibley Graduate Research Symposium (SGRS), "Mechanochemically Active Interfaces." (Ithaca, NY. March 2015)
17. Kidd J, Kim J, Silberstein MN. Southeastern Regional Meeting of the American Chemical Society (SERMACS), "Mechanical Activation of Covalently Linked Spiropyran in PDMS Networks." (Nashville, TN. October 2014)
18. Chen NC, Koker, MKA, and Silberstein MN. CHESS User Meeting, "Microstructure and Mechanical Behavior of Non-woven Fabrics." (Ithaca, NY. June 2014)
19. Manivannan MS and Silberstein MN. Sibley Graduate Research Symposium (SGRS), "Computational Study of Mechanophore Activation at Interfaces." (Ithaca, NY. March 2014)

Professional Service:

Society for Engineering Science, Board Member 2023-present, symposium organizer 2016, 2019, 2020, 2022, 2023

Society for Experimental Mechanics, Executive Board Member 2024-2025, research committee vice-chair 2023-present. Previous: (1) session chair and organizer 2013-present, (2) technical division secretary 2014-2016, (3) technical division vice-chair 2016-2018, (4) technical division chair 2018-2020, (5) research committee secretary 2021-2023

Panel member, AFOSR YIP 2024

Editorial Board Member *International Journal of Solids and Structures*, November 2023-present

Reviewer Israeli Science Foundation April 2022

Reviewer NSF GFRP January 2022

Panel member, NSF CMMI, June 2012, June 2016, April 2017, June 2020, April 2021, September 2022, May 2023

Ad hoc reviewer, NSF DMR, December 2016, May 2022; Department of Energy BES, Spring 2019-present; ARO 2024

Multiscale Materials Modeling, symposium organizer 2018, 2020

American Chemical Society, symposium organizer 2017

American Society of Mechanical Engineers, session chair 2013

South Dakota School of Mines and Technology Mechanical Engineering Industrial Advisory Board Member 2014-2015

Cornell High Energy Synchrotron Source, Users Executive Committee, Vice-Chair 2014-2015, Chair 2015-2016, member 2016-2017

Professional Affiliations:

Society for Experimental Mechanics (2010-present)

Society of Engineering Science (2015, 2017, 2019-present)

American Chemical Society (2017, 2019-2024)

American Physical Society (2011-2013)

American Society of Mechanical Engineers (2012-2014)

American Society for Engineering Education (2014-2015)

University Service:

College of Engineering:

- Theoretical and Applied Mechanics Director of Graduate Studies, July 2022 - June 2025
- Baja Project Team Advisor, Fall 2017 – Spring 2019
- Physics Assessment Committee, Fall 2014

Sibley School of Mechanical and Aerospace Engineering:

- MAE Leadership Committee, September 2022 - May 2025
- Led Engineered Living Materials Themed KK Wang Industry Day, 2023
- Undergraduate Program Committee, Co-Chair Fall 2020, Chair Spring 2021, Chair Fall 2022-Spring 2023, member Fall 2021-Spring 2022
- Biomechanics Search Committee, 2022-2023
- Additive Manufacturing and Materials Industry Day Planning Committee, 2022
- Led Advanced Materials and Manufacturing Strategic Planning, 2020
- Curriculum Committee, Summer 2020
- Strategic Search Committee, 2018-2019
- Academic Committee, 2014 – 2015, 2017-2018
- Graduate Admissions Committee, 2017, 2019
- Computational Solid Mechanics Search Committee, 2015-2017
- Qualifying Exam Committees, January 2014, June 2014, June 2017, June 2018, May 2019, 2023, 2024
- Biomechanics Search Committee, 2014 – 2015
- Colloquium Committee, 2013- 2014
- Secretary of the Faculty, Spring 2013

Member, Graduate Fields of Mechanical Engineering (primary), Theoretical and Applied Mechanics, Aerospace Engineering, Materials Science and Engineering (Spring 2013-present), Fiber Science (Spring 2014-present), Civil Engineering (Spring 2019-present)

Member, Cornell Center for Materials Research

Director, Engineered Living Materials Institute

Teaching at Cornell University:

Semester	Number	Title	Units	Level	Enrollment
Spr 2013	ENGRD 2020	*Statics and Mechanics of Solids*	4	Soph, required	145 UG
Spr 2014	ENGRD 2020	*Statics and Mechanics of Solids*	4	Soph, required	129 UG
Fall 2014	MAE 6140	*State Variable Modeling*	4	Grad	10 G
Spr 2015	ENGRD 2020	*Statics and Mechanics of Solids*	4	Soph, required	131 UG
Fall 2015	MAE 6110	*Foundations of Solid Mechanics*	4	Grad	24G, 1UG
Spr 2016	ENGRD 2020	*Statics and Mechanics of Solids*	4	Soph, required	131 UG
Fall 2016	ENGRD 2020	*Statics and Mechanics of Solids*	4	Soph, required	223 UG (co-taught)
Fall 2017	MAE 6110	*Foundations of Solid Mechanics*	4	Grad	14G, 1UG
Spring 2018	ENGRD 2020	*Statics and Mechanics of Solids*	4	Soph, required	89 UG
Fall 2018	MAE 6140	*State Variable Modeling*	4	Grad	7 G
Spring 2019	ENGRD 2020	*Statics and Mechanics of Solids*	4	Soph, required	90 UG
Fall 2020	MAE 6110	*Foundations of Solid Mechanics*	4	Grad	17 G
Spring 2021	MAE 4670/5760	*Polymer Mechanics*	3	Senior/Meng	15 UG, 5G
Fall 2021	MAE 6140	*State Variable Modeling*	4	Grad	9 G
Spring 2022	MAE 4670/5760	*Polymer Mechanics*	3	Senior/Meng	13UG, 17G
Fall 2022	MAE 6140	*State Variable Modeling*	4	Grad	7G

Spring 2023	MAE 4670/5760	*Polymer Mechanics*	3	Senior/Meng	26UG, 4G
Fall 2024	MAE 6130	*Foundations and Frontiers of Engineered Living Materials*	3	Grad	8G
Spring 2024	MAE 4670/5760	*Polymer Mechanics*	3	Senior/Meng	12UG, 11G
Fall 2025	MAE 6130	*Foundations and Frontiers of Engineered Living Materials*	3	Grad	20G
Spring 2024	MAE 4670/5670	*Polymer Mechanics*	3	Senior/Meng	22UG, 14G

Advising at Cornell University:

Postdoctoral Fellows:

Jaewoo Kim	Mechanical Engineering	October 2013-February 2015
Yuval Vidavsky	Mechanical Engineering	October 2016-October 2019
Nikola Bosnjak	Mechanical Engineering	October 2020-October 2022
Robert Wagner	Mechanical Engineering	August 2022-December 2023
Si Chen	Engineered Living Materials Institute	September 2022-present
Dongxu Liu	Mechanical Engineering	December 2024-present

Graduate Students, Ph.D. Advisor:

Naigeng Chen	Mechanical Engineering	November 2012-May 2018
Meenakshi Manivannan	Mechanical Engineering	September 2013-August 2017
Suwon Bae	Mechanical Engineering	September 2014-June 2019
Michael Buche	Theoretical and Applied Mechanics	October 2017-August 2021

Steven Yang	Mechanical Engineering	October 2017-September 2023
Xinyue Zhang	Materials Science and Engineering	October 2017-August 2022
Hongi Cai	Materials Science and Engineering	October 2019-present
Srikar Srivasta	Mechanical Engineering	October 2019-August 2022 (left with MS)
Zhongtong Wang	Mechanical Engineering	December 2019-present
Max Tepermeister	Mechanical Engineering	December 2020-present
Ellen van Wijngaarden (co-advised by Ilana Brito)	Mechanical Engineering	December 2022-present
Zachary Bernheimer	Materials Science and Engineering	November 2024-present
Shrishty Sahu	Materials Science and Engineering	December 2024-present

Graduate Students, M.S. Advisor:

Zelin Linghu	Mechanical Engineering	November 2016- May 2018
Prathamesh Raiter	Materials Science and Engineering	September 2018-August 2020
Jinyue Dai	Mechanical Engineering	September 2021-August 2023
Rahul Ghosh	Mechanical Engineering	September 2021- August 2023
Tianke Chen	Materials Science and Engineering	September 2021- August 2023

Graduate Students, M.Eng. Advisor:

Taisu Kumar	Mechanical Engineering	January 2015- December 2016
William Nunez	Mechanical Engineering	September 2020-December 2020

Katherine Nelms	Aerospace Engineering	September 2020-January 2021
Anabel Sattler	Mechanical Engineering	January 2022-June 2022
Hannah Zolock	Mechanical Engineering	January 2024-December 2024
Eve Lesburg	Materials Science and Engineering	January 2025-present

Graduate Students, Ph.D. Minor Committee Member:

Yi Xu	Theoretical and Applied Mechanics	November 2013-June 2017	Advisor (Zehnder)
Soshana Smith	Fiber Science and Apparel Design	December 2013-June 2016	Advisor (Yong Lak Joo)
Amy Engelbrecht-Wiggins	Theoretical and Applied Mechanics	September 2014-August 2017	Advisor (Pheonix)
Ilse Van MeerBeek	Mechanical Engineering	December 2014-May 2018	Advisor (Shepherd)
William Durkin	Geological Sciences	June 2014-August 2019	Advisor (Pritchard)
Chris Larson	Mechanical Engineering	November 2015-May 2017	Advisor (Shepherd)
Sabrina Li	Materials Science	September 2020-October 2023	Advisor (Benedek)
Anusha Ahobalaiah	Fiber Science and Apparel	May 2019-present	Advisor (Colindres)
Jason Mulderrig	Mechanical Engineering	November 2019-present	Advisor (Bouklas)
Emilie Baker	Mechanical Engineering	December 2020-August 2023	Advisor (Shepherd)
Ludovico Cestarollo	Materials Science	December 2020-June 2024	Advisor (El-Ghazaly)
Soumyamouli Pal	Chemical and Biomolecular Engineering	December 2020-present	Advisor (Abbott)
Samer Awale	Materials Science	May 2022-August 2023	Advisor (Tian), left with MS

Qi Tang	Mechanical Engineering	June 2023-present	Advisor (Hassani)
Tian Tang	Materials Science	December 2023-present	Advisor (Archer)
Gangchen Ren	Mechanical Engineering	December 2023-present	Advisor (Tian)
Patrice Crosby	Microbiology	November 2024-present	Advisor (Yang)
Ruohong Chen	Mechanical Engineering	November 2024-present	Advisor (Yeo)
Kevin Kong	Mechanical Engineering	December 2024-present	Advisor (Tian)

Graduate Students, M.S. Minor Committee Member:

Vaibhavi Vaidya	Fiber Science and Apparel	November 2013-October 2015	Advisor (Netravali)
Simge Uzun	Fiber Science and Apparel	December 2013-December 2016	Advisor (Hinestroza)
Zhi Wang	Mechanical Engineering	March 2020 – August 2021	Advisor (Tian)
Shengjie Tang	Mechanical Engineering	April 2022-August 2023	Advisor (Yeo)
Neel Baxi	Mechanical Engineering	June 2023-present	Advisor (Royer)
Sooyon Chang	Mechanical Engineering	January 2024-present	Advisor (Tian)
Aneesha Sengupta	Mechanical Engineering	April 2024-present	Advisor (Shepherd)

Undergraduate Students:

Jipeng Qi	Mechanical Engineering and Materials Science	March 2013-May 2014
Hedan Bai	Mechanical Engineering	March 2013-December 2013
Jesse Kidd	Concord College (REU)	June 2014-August 2014
Kaylee Schmall	Materials Science and Engineering	September 2013-May 2015

Aimee Owens	Civil Engineering	March 2015 – August 2015
Simran Rastogi	Mechanical Engineering	March 2015 – August 2015
Cristian Alonso	Mechanical Engineering	March 2015 – March 2016
Jackson Siff	Mechanical Engineering	February 2017-November 2017
Marina Chang	Materials Science	March 2017-May 2017
Kenneth Fang	Electrical Engineering	March 2018-August 2018
Maegan Cremer	University of Florida (REU)	Summer 2017
Julia Owens	Chemical Engineering	June 2017-May 2018
Allison Rzepka	Materials Science	September 2018-May 2021
Alwany Angeles Taveras	Biological Engineering	March 2019-December 2019
Shreyasvi Gowda	Mechanical Engineering	May 2020-December 2022
Tiffany Chui	Materials Science	September 2020-June 2022
Hyun Na	Mechanical Engineering	January 2021-May 2021
Alan Zoubi	Mechanical Engineering	February 2021-December 2023
Taylor Edwards	Mechanical Engineering	June 2021-August 2021
Bex Pendrak	Mechanical Engineering	June 2022-December 2022
Elizabeth Liku	Undeclared	February 2024-April 2024
Miranda Brunette	Materials Science	May 2024-present
Puxuan Yuan	Mechanical Engineering	May 2024-August 2024
Tyler Chen	Undeclared	August 2024-present

Community Engagement: (* indicates graduate student involvement)

Cornell SWE faculty panelist (2025)
CBE Women's Group "Lunch with an Academic" (2023)
Panelist, College & Career Readiness, ExpandED Schools, Virtual (2022)
Developer and host, 4-H Career Explorations for students around NY State, Cornell (2017-2019, 2021-2024)*
Presenter, Cornell Undergraduate Society of Women Engineers workshop for high school girls to learn about engineering (2019)
Panelist, Cornell Graduate Society of Women Engineers professional development panel and network dinner, Cornell (2019)
Instructor, booth in 4-H Youth Building at NY State Fair, polymer themed hands-on learning activities, Syracuse (2017, 2018, 2019)*
Instructor, booth in 4-H Youth Building at NY State Fair, recycling themed hands on learning activities, Syracuse (2016)*

Instructor, URM middle school students at Howard University Middle School of Mathematics and Science, “States of Matter” lesson, Washington DC (2015)*

Society for Experimental Mechanics Junior Faculty Panel panelist (2015, 2017)

Presenter, parents of female high school students Women's Outreach in Materials, Energy and Nanobiotechnology (WOMEN) program, on materials related career paths, Cornell (2015)

Developer, Cornell Center for Materials Science lending library, middle and high school co-curricular learning kits on light propagation and damage detection, NY state (2014-2015)*

Buddy and lab tour host, Expanding Your Horizons program for middle school girls, science/math educational activities, Cornell (2014)*

Instructor, kindergarten and first graders at Greater Ithaca Activities Center, materials science themed hands on learning activities, Ithaca (2014)*

Instructor, Saudi Arabian Women’s Technology Program for female high school students from Saudi Arabia, engineering mini-course and hands-on projects, MIT (2011)

Organizing Committee, Path of Professorship Workshop for female PhD candidates and postdocs, MIT (2010)

Instructor, Women’s Technology Program in Mechanical Engineering for American female high school students, engineering mini-course and hands-on projects, MIT (2008)