Danielle J. Mai

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Education

2016 Ph. D. Chemical and Biomolecular Engineering
University of Illinois at Urbana-Champaign, Urbana, IL
Advisor: Professor Charles M. Schroeder
Dissertation title: *Single Molecule Studies of Branched Polymer Dynamics*

2014 M. S. Chemical and Biomolecular Engineering
University of Illinois at Urbana-Champaign, Urbana, IL

2011 B. S. E. Chemical Engineering, Minor in Mathematics, *summa cum laude*
University of Michigan, Ann Arbor, MI

Research Appointments

9/2023 – present Assistant Professor by courtesy, Department of Materials Science & Engineering
1/2020 – present Assistant Professor, Department of Chemical Engineering
1/2020 – 8/2022 James and Anna Marie Spilker Faculty Fellow
Stanford University, Stanford, CA

9/2017 – 11/2019 Arnold O. Beckman Postdoctoral Fellow
9/2016 – 9/2017 Postdoctoral Associate
Department of Chemical Engineering, Bradley D. Olsen Group
Massachusetts Institute of Technology, Cambridge, MA

8/2013 – 8/2016 National Science Foundation Graduate Research Fellow
8/2011 – 8/2013 Illinois Distinguished Fellow
Department of Chemical & Biomolecular Engineering, Charles M. Schroeder Group
University of Illinois at Urbana-Champaign, Urbana, IL

5/2011 – 8/2011 Process Research Intern, ExxonMobil Research & Engineering, Catalyst Technology
ExxonMobil Corporation, Annandale, NJ
5/2010 – 8/2010 Research and Development Intern, High Performance Foams, BISCO Silicones
Rogers Corporation, Rogers, CT
4/2009 – 5/2010 Research Assistant, Department of Chemical Engineering, Weber Research Group
University of Michigan, Ann Arbor, MI
9/2006 – 8/2007 Research Assistant, Department of Biological Sciences, Rossbach Research Group
Western Michigan University, Kalamazoo, MI

Awards and Honors

2025 BASF Distinguished Lecturer (Wayne State University)
2024 Scialog Fellow: Sustainable Minerals, Metals, and Materials
2023 MIT Technology Review 35 Innovators Under 35 (TR35)
2023 ACS Petroleum Research Fund Doctoral New Investigator Award
2023 Arthur K. Doolittle Award, ACS Polymeric Materials Science and Engineering (PMSE)
2023 Stanford Asian American Activities Center (A^3C) Faculty Award
2022 Air Force Office of Scientific Research Young Investigator Program Award (AFOSR YIP)

2022	Stanford Faculty Women's Forum Inspiring Early Academic Career Award
2022	*ACS Polymers Au* Rising Stars in Polymers
2021	DPOLY/UKPPG Polymer Lecture Exchange Award
2020	AIChE 35 Under 35 Award
2017 – 2019	Arnold O. Beckman Postdoctoral Fellows Award
2018	ACS Polymeric Materials Science and Engineering (PMSE) Future Faculty Scholar
2018	1st Place Poster Prize, APS Division of Polymer Physics (DPOLY)
2018	MIT IMPACT Fellow
2013 – 2016	National Science Foundation Graduate Research Fellowship
2011 – 2016	Illinois Distinguished Fellowship
2013 – 2015	Mavis Future Faculty Fellowship
2016	University of Washington Distinguished Young Scholar Seminar
2016	APS FGSA Travel Award for Excellence in Graduate Research
2015	Lam Research Outstanding Graduate Student Award
2015	AIChE Women's Initiative's Committee (WIC) Travel Award
2015	1st Place Oral Presentation, 14th ChBE Graduate Research Symposium, U. Illinois
2013, '15, '16	Hanratty Travel Award, U. Illinois Chemical & Biomolecular Engineering
2013	1st Place Poster, 12th ChBE Graduate Research Symposium, U. Illinois
2013	List of Teachers Ranked as Excellent, University of Illinois
2012	George M. Landes Technical Communication Team Prize, U. Michigan Engineering
2011	George M. Landes Individual Prize, U. Michigan Chemical Engineering
2011	Proprietary Technology Innovation Award, Rogers Corporation
2010 – 2011	James B. Angell Scholar, University of Michigan
2007 – 2011	University Honors, University of Michigan
2007 – 2011	College of Engineering Dean's List, University of Michigan
2007 – 2011	National Merit Scholarship
2007 – 2011	Robert C. Byrd Honors Scholarship
2007 – 2011	College of Engineering Scholarship, University of Michigan
2007	Regents Merit Scholarship, University of Michigan

Peer-Reviewed Publications

Note: undergraduate author, *equal contributions, †corresponding, ORCID: 0000-0001-5447-2845

[25] N. Eckman, O. Saouaf, C. Jons, S. V. Pingali, A. Prossnitz, C. Kasse, **D. J. Mai**,† E. A. Appel.† "Small-angle neutron scattering reveals structural hierarchy of polymer–nanoparticle hydrogels." *Macromolecules*, **59**(9), 5398-5407 (2026).

[24] M. P. Chang, T. Jin, A. P. Gudinas, D. Fernandez, A. Alexander-Katz, T. Matsui, **D. J. Mai**.† "Repetitive proteins that undergo large conformational changes evade structural prediction algorithms." *Journal of Chemical Physics*, **163**, 224906 (2025).

[23] A. P. Gudinas, G. M. Shambharkar, M. P. Chang, D. Fernandez, T. Matsui, **D. J. Mai**.† "Ion-selective conformational stabilization of a disordered repeats-in-toxin protein domain." *Biophysical Journal*, **124**(23), 4243–4254 (2025).

[22] M. C. Burroughs, E. L. Quirk, B. M. Wirtz, T. H. Schloemer, D. N. Congreve, **D. J. Mai**.† "Light-responsive star polymers for reprocessable network formation and deconstruction." *Macromolecules*, **58**(12), 6066-6076 (2025).

[21] E. L. Quirk, M. C. Burroughs, **D. J. Mai**.† "*In situ* photo-rheology monitors viscoelastic changes in photo-responsive polymer networks." *Journal of Visualized Experiments*, **220**, e68394 (2025).

[20] M. C. Quan, **D. J. Mai**.† "Biomolecular actuators for soft robots." *Chemical Reviews*, **125**(10), 4974–5002 (2025). Front Cover.

[19] M. P. Chang, W. Huang, G. M. Shambharkar, K. M. Hernandez, **D. J. Mai**.† "Sequence-defined structural transitions by calcium-responsive proteins." *Polymer Chemistry*, **15**, 4864-4874 (2024).

[18] B. M. Wirtz, A. G. Yun, C. T. Wick, X. J. Gao, **D. J. Mai**.† "Protease-driven phase separation of elastin-like polypeptides." *Biomacromolecules*, **25**(8), 4898–4904 (2024).

[17] M. A. Morris, Y. J. Yang, **D. J. Mai**, B. D. Olsen.† "Engineered selective biotoxin-binding hydrogels for toxin sequestration." *Journal of Polymer Science*, **62**(16), 3861–3869 (2024).

[16] Q. Zhou, B. M. Wirtz, T. H. Schloemer,*,† M. C. Burroughs, M. Hu, P. Narayanan, J. Lyu, A. O. Gallegos, C. Layton, **D. J. Mai**,*,† D. N. Congreve.*,† "Spatially controlled UV light generation at depth using upconversion micelles." *Advanced Materials*, 2301563 (2023).

[15] M. C. Burroughs, T. H. Schloemer, D. N. Congreve, **D. J. Mai**.† "Gelation dynamics during photocrosslinking of polymer nanocomposite hydrogels." *ACS Polymers Au*, **3**(2), 217–227 (2023).

[14] M. A. Morris, R. Bataglioli, **D. J. Mai**, Y. J. Yang, J. M. Paloni, C. E. Mills, Z. Schmitz, E. Ding, A. C. Huske, B. D. Olsen.† "Democratizing the rapid screening of protein expression for materials development." *Molecular Systems Design & Engineering*, **8**, 227–239 (2023).

[13] M. P. Chang,* W. Huang,* **D. J. Mai**.† "Monomer-scale design of functional protein polymers using consensus repeat sequences." *Journal of Polymer Science*, **59**, 2644–2664, (2021).

[12] Y. J. Yang, **D. J. Mai**, S. Li, M. A. Morris, B. D. Olsen.† "Tuning selective transport of biomolecules through site-mutated nucleoporin-like protein (NLP) hydrogels." *Biomacromolecules*, **22**(2), 289–298 (2021).

[11] **D. J. Mai**,*,† C. M. Schroeder.*,† "100th Anniversary of Macromolecular Science Viewpoint: Single-Molecule Studies of Synthetic Polymers." *ACS Macro Letters*, **9**(9), 1332–1341 (2020).

[10] B. M. Seifried,* W. Qi,* Y. J. Yang, **D. J. Mai**, W. B. Puryear, J. A. Rundstadler, G. Chen, B. D. Olsen.† "Glycoproteins with tunable functionalization through global amino acid substitution and copper click chemistry." *Bioconjugate Chemistry*, **31**(3) 554–556 (2020).

[9] C. E. R. Edwards,* **D. J. Mai**,* S. Tang, and B. D. Olsen.† "Molecular anisotropy and rearrangement as mechanisms of toughness and extensibility in entangled physical gels." *Physical Review Materials*, 4, 015602 (2020).

[8] Y. J. Yang,* **D. J. Mai**,* T. J. Dursch, B. D. Olsen.† "Nucleopore-inspired polymer hydrogels for selective biomolecular transport". *Biomacromolecules*, **19**(10), 3905–3916, (2018).

[7] **D. J. Mai**,* A. Saadat,* B. Khomami,† C. M. Schroeder.† "Stretching dynamics of single comb polymers in extensional flow". *Macromolecules*, **51**(4), 1507–1517, (2018).

[6] **D. J. Mai**, C. M. Schroeder.† "Single polymer dynamics of topologically complex DNA". *Current Opinion in Colloid and Interface Science*, **26**, 28-40, (2016).

[5] **D. J. Mai**, A. B. Marciel, C. E. Sing, C. M. Schroeder.† "Topology-controlled relaxation dynamics of single branched polymers". *ACS Macro Letters*, **4**(4), 446–452, (2015). Cover.

[4] A. B. Marciel, **D. J. Mai**, C. M. Schroeder.† "Template-directed synthesis of structurally defined branched polymer architectures". *Macromolecules*, **48**(5), 1296–1303, (2015).

[3] **D. J. Mai**, C. A. Brockman, C. M. Schroeder.† "Microfluidic systems for single DNA dynamics". *Soft Matter*, **8**, 10560–10572, (2012).

[2] E. J. Petersen,† R. A. Pinto, **D. J. Mai**, P. F. Landrum, W. J. Weber.† "Influence of polyethyleneimine graftings of multi-walled carbon nanotubes on their accumulation and elimination by and toxicity to *Daphnia magna*". *Environmental Science & Technology*, **45**(3), 1133–1138, (2010).

[1] S. Rossbach,† **D. J. Mai**, E. L. Carter, L. Sauviac, D. Capela, C. Bruand, F. J. de Bruijn. "Response of *Sinorhizobium meliloti* to elevated concentrations of cadmium and zinc". *Applied and Environmental Microbiology*, **74**(13), 4218–4221, (2008).

Manuscripts in Progress

[2] L. X. Wang, **D. J. Mai**.† "Hindered diffusion and complex molecular conformations of single comb polymers in 1D confinement." *Submitted*, (2025).

[1] B. M. Wirtz, J. D. Grayson, W. R. Arnold, T. Matsui, **D. J. Mai**.† "Tunable protein assembly enables protease-driven micelle-to-coacervate transitions." *Submitted*, (2026).

Non-Refereed Publications

[3] Z. Qiang, C. K. Ullal, **D. J. Mai**. "Single-molecule studies in polymer science." *Journal of Polymer Science*, **62**(7), 1233-1234 (2024). Guest Editorial.

[2] A. P. Gudinas, **D. J. Mai**.† "Polymer protagonists for biological processes." *Nature Chemistry*, **15**, 751–752 (2023). News & Views Article.

[1] **D. J. Mai**. "Turn on the stereo: engaging in mentorship from all directions." *AIChE CEP Magazine*, **118**(3), 16, (2022). Emerging Voices Editorial.

Invited Lectures

[78] December 2026, "Decoding Repetitive Proteins to Engineer Stimuli-Responsive Biopolymers", Princeton University, Department of Chemical and Biological Engineering

[77] April 2026, "Decoding Repetitive Proteins to Design Stimuli-Responsive Biopolymers", Dartmouth College, Department of Chemistry

[76] March 2026, "Re-Processable Network Formation and Deconstruction Using Light-Responsive Star Polymers", APS Global Summit, Mechanics of Polymer Networks, Elastomers, and Gels, Denver, CO

[75] March 2026, "Fundamental Physics of Polymer Self-Assembly for Biotechnology", APS Global Summit, Polymers in Biotechnology (DPOLY Short Course), Denver, CO

[74] February 2026, "Decoding Repetitive Proteins to Engineer Stimuli-Responsive Biopolymers", University of Illinois, Chemistry-Biology Interface Training Program

[73] February 2026, "Decoding Repetitive Proteins to Engineer Stimuli-Responsive Biopolymers", University of California, Davis, Department of Chemical Engineering

[72] November 2025, "Photo-reversible star polymer networks as sustainable, reprocessable materials", Society of Plastics Engineers, Golden Gate Section (Virtual)

[71] October 2025, "Single-Molecule Investigations of Comb Polymers in Confinement", University of California, Berkeley, Bay Area Soft Matter Symposium

[70] August 2025, "Single-Molecule Investigations of Comb Polymers in Confinement", Telluride Science Research Center Workshop on Polymer Physics, Telluride, CO

[69] May 2025, "Reversible Photocrosslinking of Polymer Networks for Sustainable 3D Printing" Stanford University, Stanford Energy Postdoctoral Fellowship Symposium, Stanford, CA

[68] May 2025, "Decoding Repetitive Proteins to Program Stimuli-Responsive Biopolymers" Self-Assembly and Supramolecular Chemistry Gordon Research Conference, Les Diablerets, Switzerland

[67] May 2025, "Decoding Repetitive Proteins to Engineer Stimuli-Responsive Biopolymers" Rutgers University, Department of Chemical & Biomolecular Engineering

[66] April 2025, "Decoding Repetitive Proteins to Engineer Stimuli-Responsive Biopolymers"
North Carolina State University, Department of Chemical & Biomolecular Engineering

[65] April 2025, "Designing Calcium-Binding Repeat Proteins as Biomolecular Actuators"
MRS Spring Meeting, Biopolymers for Electronics and Robotics, Seattle, WA

[64] April 2025, "Decoding Repetitive Proteins to Engineer Stimuli-Responsive Biopolymers"
Case Western Reserve University, Department of Macromolecular Science and Engineering

[63] April 2025, "Mai Lab at Stanford: Molecular-Scale Biopolymer Engineering"
Twist Bioscience, South San Francisco, CA (Virtual)

[62] March 2025, "Photochemical Recycling of Multi-Arm Star Polymer Networks"
ACS Spring Meeting, Responsive Colloidal Networks, San Diego, CA

[61] March 2025, "Metal Ion Sequestration with Repetitive Protein-Based Polyanions"
ACS Spring Meeting, Polymers with Inorganic Materials, San Diego, CA

[60] February 2025, "Decoding Repetitive Proteins to Engineer Stimuli-Responsive Biopolymers"
University of Cincinnati, Department of Chemical & Environmental Engineering

[59] February 2025, "Decoding Repetitive Proteins to Program Stimuli-Responsive Biopolymers"
University of San Diego, Department of Physics

[58] January 2025, "Decoding Repetitive Proteins to Engineer Stimuli-Responsive Biopolymers"
University of Virginia, Department of Chemical Engineering

[57] January 2025, "Decoding Repetitive Proteins to Program Stimuli-Responsive Biopolymers"
(Keynote Session), Pomona, CA

[56] January 2025, "Decoding Repetitive Proteins to Engineer Stimuli-Responsive Biopolymers"
Wayne State University, Department of Chemical Engineering & Materials Science, BASF Lecture Series

[55] October 2024, "Photochemical Recycling of Nanocomposite Polymer Networks"
University of San Diego, Frontiers in Soft Matter and Macromolecular Networks Symposium

[54] September 2024, "Reversible Photocrosslinking of Polymer Networks for Sustainable 3D Printing"
University of Michigan, Department of Chemical Engineering, Graduate Research Symposium Keynote

[53] September 2024, "Decoding Repetitive Proteins to Engineer Stimuli-Responsive Biopolymers"
University of Arizona, Department of Materials Science and Engineering

[52] July 2024, "Molecular-Scale Engineering of Stimuli-Responsive Biopolymers"
Stanford University, Environmental Health & Safety, Research Safety All-Hands Meeting

[51] June 2024, "Decoding Repetitive Proteins to Program Stimuli-Responsive Biopolymers"
ACS Colloids & Surface Science Symposium, Biological, Bioinspired, & Biomimetic Colloids & Interfaces, Seattle, WA

[50] March 2024, "Decoding Repetitive Proteins to Build Functional Biomaterials"
ACS Spring Meeting, PMSE Centennial: Celebration of Success and New Frontiers in Polymeric Materials Science and Engineering, New Orleans, LA

[49] March 2024, "Reversible Photocrosslinking of Polymer Networks for Sustainable 3D Printing"
ACS Spring Meeting, Adaptive Materials from Dynamic Polymer Networks & Composites, New Orleans, LA

[48] March 2024, "Decoding Repetitive Proteins to Program Stimuli-Responsive Biopolymers"
APS March Meeting, Programmed Responsive Polymers and Soft Matter, Minneapolis, MN

[47] March 2024, "Isothermal Phase Separation of Cleavable Elastin-Like Polypeptides"
APS March Meeting, Dillon Medal Symposium, Minneapolis, MN

[46] February 2024, "Decoding Repetitive Proteins to Program Stimuli-Responsive Biopolymers"
University of Toronto, Department of Chemistry, Working towards Inclusivity in Chemistry Toronto (WICTO)
Student-Selected Seminar Speaker

[45] February 2024, "Decoding Repetitive Proteins to Program Stimuli-Responsive Biopolymers"
Georgia Institute of Technology, Department of Materials Science & Engineering

[44] October 2023, "Molecular-Scale Engineering of Stimuli-Responsive Polymer Hydrogels"
Rochester Institute of Technology, Department of Chemical Engineering

[43] September 2023, "Molecular-Scale Engineering of Stimuli-Responsive Polymer Hydrogels"
University of California, Berkeley, Nanosciences and Nanoengineering Institute

[42] July 2023, "Molecular-Scale Engineering of Stimuli-Responsive Polymer Hydrogels"
Northwestern University, Department of Chemical and Biological Engineering,
Context, Connections, and Community (C3S) Symposium, Keynote Speaker

[41] June 2023, "Leveraging Consensus Repeat Sequences to Engineer Calcium-Responsive Soft Materials",
Telluride Science Research Center Workshop on Molecular Engineering of Soft Matter, Telluride, CO

[40] May 2023, "Molecular-Scale Engineering of Stimuli-Responsive Polymer Hydrogels"
Golden Gate Polymer Forum, San Francisco, CA (Virtual)

[39] May 2023, "Designing Calcium-Binding Repeat Proteins as Biomolecular Actuators and Composites"
United States Army DEVCOM Soldier Center, Natick, MA (Virtual)

[38] May 2023, "A Circular 3D Printing Economy Enabled by Triplet Fusion Upconversion"
Stanford University, Energy Solutions Week, Panel on Sustainable Manufacturing

[37] March 2023, "Engineering Calcium-Responsive Biopolymers using Consensus Repeat Sequences",
ACS Spring Meeting, Polymers at the Interface with Biology Symposium, Indianapolis, IN

[36] March 2023, "Molecular-Scale Engineering of Stimuli-Responsive Hydrogels",
Massachusetts Institute of Technology, Langer Lab Seminar Series (Virtual)

[35] January 2023, "Leveraging Consensus Repeat Sequences to Engineer Calcium-Responsive Soft Materials",
Peptide Materials Gordon Research Conference, Galveston, TX

[34] December 2022, "Sequence Effects in Calcium-Responsive Biopolymers",
ACS POLY Workshop, Polymers in Medicine and Biology, Napa, CA

[33] November 2022, "Sequence Effects in Calcium-Responsive Biopolymers",
AIChE Annual Meeting, Polymers (Area 8A) Plenary, Phoenix, AZ

[32] October 2022, "Sequence Effects in Calcium-Responsive Biopolymers",
Stanford University, Department of Chemical Engineering,
Engineering of Soft Matter Symposium in Honor of Emeritus Professor Curt Frank

[31] September 2022, "Sequence Effects in Calcium-Responsive Biopolymers",
Physical Aspects of Polymer Science (IoP Physics Polymer Physics Group), London, United Kingdom

[30] July 2022, "Sequence Effects in Calcium-Responsive Biopolymers",
Polymer Physics Gordon Research Conference, Mount Holyoke, MA

[29] October 2021, "Dynamic Stretching and Stiffening of Protein-Based Hydrogels",
Inha University (Incheon, South Korea), Department of Biological Engineering (Virtual)

[28] April 2021, "Engineering Biopolymer Hydrogels by Molecular Programming",
University of Illinois, Department of Materials Science and Engineering, Soft Materials Seminar (Virtual)

[27] March 2021, "Stretching Mechanisms of Entangled Physical Gels",
86th New England Complex Fluids Symposium (Virtual)

[26] October 2020, "Stretching Dynamics of Topologically Complex Polymers",
Carnegie Mellon University, Complex Fluids Engineering Seminar (Virtual)

[25] October 2020, "Engineering Biopolymer Hydrogels by Molecular Programming",
Stanford University, Shriram Basement Seminar (Virtual)

[24] September 2020, "Molecular-Scale Engineering of Topologically Complex Biopolymers",
Stanford University, Department of Chemical Engineering, Convocation Keynote (Virtual)

[23] February 2020, "Stretching Dynamics of Topologically Complex Polymers",
Stanford University, Stanford Polymer Collective, Lunch & Learn Seminar

[22] August 2019, "Mimicking the Nuclear Pore to Control Protein Transport",
Beckman Symposium, Irvine, CA

[21] March 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
Stanford University, Department of Chemical Engineering

[20] February 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
University of British Columbia, Department of Chemical and Biological Engineering

[19] February 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
University of Texas, McKetta Department of Chemical Engineering

[18] February 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
University of Utah, Department of Chemical Engineering

[17] February 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
University of Pennsylvania, Department of Materials Science and Engineering

[16] February 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
University of Southern California, Mork Family Department of Chemical Engineering & Materials Science

[15] February 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
University of California, Berkeley, Department of Chemical and Biomolecular Engineering

[14] January 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
University of Chicago, Institute for Molecular Engineering

[13] January 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
Princeton University, Department of Chemical and Biological Engineering

[12] January 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
Northeastern University, Department of Chemical Engineering

[11] January 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
Georgia Institute of Technology, School of Chemical and Biomolecular Engineering

[10] January 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
University of California, Davis, Department of Chemical and Biomolecular Engineering

[9] January 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
University of California, Irvine, Department of Chemical and Biomolecular Engineering

[8] January 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
University of Minnesota, Department of Chemistry

[7] January 2019, "Engineering Hierarchical Polymers to Control Biomolecular Transport",
University of Delaware, Department of Chemical and Biomolecular Engineering

[6] December 2018, "Engineering Hierarchical Polymers to Control Biomolecular Transport", University of Wisconsin–Madison, Department of Chemical and Biological Engineering

[5] October 2018, "Engineering Hierarchical Polymers to Control Biomolecular Transport", University of Illinois at Chicago, Department of Chemical Engineering

[4] August 2018, "Engineering Hierarchical Polymers to Control Biomolecular Transport", ACS Fall Meeting, PMSE Future Faculty Symposium, Boston, MA

[3] July 2016, "Single Molecule Dynamics of Branched DNA Polymers", Polymer Physics Gordon Research Seminar, Mount Holyoke, MA

[2] July 2016, "Single Molecule Dynamics of Branched DNA Polymers", University of Washington, Department of Chemical Engineering, Distinguished Young Scholars Seminar

[1] February 2016, "Single Molecule Dynamics of Branched DNA Polymers", University of Illinois, Department of Mechanical Engineering, Fluid Mechanics Seminar Series

Contributed Presentations

[109] A. Rosario, E. L. Quirk, P. Narayanan, D. Congreve, **D. J. Mai**. "Nanocapsule Incorporation Strategies to Enhance Polymer Network Properties" (poster), American Physical Society Global Summit. Denver, CO, March 2026.

[108] B. M. Wirtz (speaker), J. D. Grayson, W. R. Arnold, T. Matsui, **D. J. Mai**. "Protease-driven coacervation of elastin-like polypeptides", BPS2026 Biophysical Society Annual Meeting. San Francisco, CA, February 2026.

[107] A. P. Gudinas, G. M. Shambharkar, M. P. Chang, D. Fernandez, T. Matsui, **D. J. Mai**. "Ion-selective structural transitions of a disordered repeats-in-toxin protein domain" (poster), BPS2026 Biophysical Society Annual Meeting. San Francisco, CA, February 2026.

[106] A. P. Gudinas, V. Frank, G. M. Shambharkar, M. P. Chang, D. Fernandez, T. Matsui, B. N. Balzer, T. Hugel, **D. J. Mai**. "Ion-selective conformational dynamics of disordered repeats-in-toxin proteins" (poster), Protein Folding Dynamics Gordon Research Conference. Pomona, CA, January 2026.

[105] M. C. Quan (speaker), A. P. Gudinas, M. P. Chang, **D. J. Mai**. "pH-Controlled Hierarchical Assembly of Ion-Responsive Repeat Proteins", American Institute of Chemical Engineers Annual Meeting. Boston, MA, October 2025.

[104] M. C. Quan, M. P. Chang, P. M. Urbina-Ramos, **D. J. Mai** (poster). "Engineering Ion-Responsive Protein-Based Hydrogels Towards Muscle-Mimetic Materials", American Institute of Chemical Engineers Annual Meeting. Boston, MA, October 2025.

[103] E. L. Quirk (speaker), C. Pereira dos Santos, M. C. Burroughs, B. M. Wirtz, T. H. Schloemer, D. N. Congreve, **D. J. Mai**. "Enhancing the re-processability of photo-recyclable polymer networks using molecular design and in situ photo-rheology", Society of Rheology, 96th Annual Meeting. Santa Fe, NM, October 2025.

[102] E. L. Quirk, J. Shi, S. A. Rogers, **D. J. Mai** (poster). "Evolution of nonmonotonic viscous moduli during the formation of polymer hydrogels", Society of Rheology, 96th Annual Meeting. Santa Fe, NM, October 2025.

[101] L. X. Wang, **D. J. Mai** (poster). "Single-Molecule Dynamics of Confined Branched Polymers", Polymers Gordon Research Conference. Mount Holyoke, MA, June 2025.

[100] M. C. Burroughs, L. Nieman, A. Conyer, L. X. Wang, **D. J. Mai** (poster). "Hybrid synthesis of bottlebrush DNA polymers for direct visualization at fluid–solid interfaces", American Chemical Society Spring Meeting. San Diego, CA, March 2025.

[99] M. C. Burroughs (speaker), E. L. Quirk, B. M. Wirtz, T. H. Schloemer, D. N. Congreve, **D. J. Mai**. "Photochemical recycling of multi-arm star polymer networks", American Chemical Society Spring Meeting. San Diego, CA, March 2025.

[98] E. L. Quirk (speaker), C. Pereira dos Santos, M. C. Burroughs, B. M. Wirtz, T. H. Schloemer, D. N. Congreve, **D. J. Mai**. "Optimizing light exposure in photochemical polymer recycling for sustainable 3D printing", American Physical Society Global Summit. Anaheim, CA, March 2025.

[97] E. L. Quirk, J. Shi, S. A. Rogers, **D. J. Mai** (poster). "Evolution of nonmonotonic viscous moduli during the formation of polymer hydrogels", American Physical Society Global Summit. Anaheim, CA, March 2025.

[96] B. M. Wirtz, J. D. Grayson, A. G. Yun, C. Wick, X. Gao, **D. J. Mai** (speaker). "Isothermal phase separation of protease-responsive elastin-like polypeptides", American Physical Society Global Physics Summit. Anaheim, CA, March 2025.

[95] B. M. Wirtz, **D. J. Mai** (poster). "Protease-Driven Phase Separation of Elastin-like Polypeptides", Peptide Materials Gordon Research Conference. Pomona, CA, January 2025.

[94] M. P. Chang, **D. J. Mai** (poster). "Engineering Repetitive Calcium-Responsive Proteins for Biomolecular Actuation", Peptide Materials Gordon Research Conference. Pomona, CA, January 2025.

[93] B. M. Wirtz (speaker), **D. J. Mai**. "Protease-Driven Phase Separation of Elastin-like Polypeptides", Peptide Materials Gordon Research Seminar. Pomona, CA, January 2025.

[92] M. P. Chang (speaker), **D. J. Mai**. "Engineering Repetitive Calcium-Responsive Proteins for Biomolecular Actuation", Peptide Materials Gordon Research Seminar. Pomona, CA, January 2025.

[91] B. M. Wirtz (speaker), A. G. Yun, C. Wick, X. Gao, **D. J. Mai**. "Protease-driven phase separation of elastin-like polypeptides", American Institute of Chemical Engineers Annual Meeting. San Diego, CA, October 2024. **Finalist, Excellence in Graduate Polymer Research Session.**

[90] B. M. Wirtz, **D. J. Mai** (poster). "Efficient assembly of genes that encode repetitive fusion protein biomaterials", American Institute of Chemical Engineers Annual Meeting. San Diego, CA, October 2024.

[89] M. C. Burroughs (speaker), E. L. Quirk, B. M. Wirtz, T. H. Schloemer, D. N. Congreve, **D. J. Mai**. "Dynamic rheology during recycling of photo-responsive star polymer networks", American Institute of Chemical Engineers Annual Meeting. San Diego, CA, October 2024.

[88] M. C. Burroughs (speaker), L. Nieman, A. C. Conyer, L. X. Wang, **D. J. Mai**. "Hybrid synthesis of bottlebrush DNA polymers for single-molecule rheology", American Institute of Chemical Engineers Annual Meeting. San Diego, CA, October 2024.

[87] M. C. Burroughs (speaker), E. L. Quirk, B. M. Wirtz, T. H. Schloemer, D. N. Congreve, **D. J. Mai**. "Dynamic rheology during recycling of photo-responsive star polymer networks", Society of Rheology, 95th Annual Meeting. Austin, TX, October 2024.

[86] M. C. Burroughs, L. Nieman, A. C. Conyer, L. X. Wang, **D. J. Mai**. "Hybrid synthesis of bottlebrush DNA polymers for single-molecule rheology" (poster), Society of Rheology, 95th Annual Meeting. Austin, TX, October 2024.

[85] Q. Zhou, B. M. Wirtz, M. C. Burroughs, T. H. Schloemer, D. N. Congreve, **D. J. Mai** (speaker). "Spatially controlled ultraviolet light generation for additive manufacturing of polymer nanocomposites", Society of Rheology, 95th Annual Meeting. Austin, TX, October 2024.

[84] B. M. Wirtz, A. G. Yun, C. Wick, X. J. Gao, **D. J. Mai**. "Protease-driven phase separation of elastin-like polypeptides" (poster), Polymer Physics Gordon Research Conference. Mount Holyoke, MA, July 2024.

[83] A. P. Gudinas (speaker), G. M. Shambharkar, Y. Bian, M. P. Chang, **D. J. Mai**. "Metal sequestration with repetitive ion-binding proteins", IUPAC MACRO 2024. Warwick, United Kingdom, July 2024.

[82] A. P. Gudinas, G. M. Shambharkar, Y. Bian, M. P. Chang, **D. J. Mai**. "Metal sequestration with repetitive ion-binding proteins" (poster), Bioinspired Materials Gordon Research Conference. Les Diablerets, Switzerland, June 2024.

[81] M. C. Burroughs (speaker), E. L. Quirk, B. M. Wirtz, T. H. Schloemer, D. N. Congreve, **D. J. Mai**. "Dynamic rheology during recycling of photo-responsive star polymer networks", ACS Colloids and Surface Science Symposium. Seattle, WA, June 2024.

[80] M. C. Burroughs, L. Nieman, L. X. Wang, **D. J. Mai** (poster). "Hybrid synthesis of bottlebrush DNA polymers for single-molecule rheology", ACS Colloids and Surface Science Symposium. Seattle, WA, June 2024.

[79] M. C. Burroughs, E. L. Quirk, B. M. Wirtz, T. H. Schloemer, D. N. Congreve, **D. J. Mai** (speaker). "Investigating the dynamics of photo-reversible polymer hydrogels using *in situ* shear rheology", Materials Research Society Spring Meeting. Seattle, WA, April 2024.

[78] M. P. Chang (speaker), A. P. Gudinas, K. M. Hernandez, **D. J. Mai**. "Engineering biomolecular actuators from calcium-responsive repeat proteins", Materials Research Society Spring Meeting. Seattle, WA, April 2024.

[77] M. P. Chang, G. M. Shambharkar, W. Huang, K. M. Hernandez, **D. J. Mai** (poster). "Sequence control of bioinspired calcium-responsive protein-based polymers", Materials Research Society Spring Meeting. Seattle, WA, April 2024.

[76] B. M. Wirtz (speaker), A. Yun, X. Gao, **D. J. Mai**. "Protease-driven self-assembly of elastin-like polypeptides", American Chemical Society Spring Meeting. New Orleans, LA, March 2024.

[75] B. M. Wirtz, **D. J. Mai** (poster). "Efficient assembly of genes that encode repetitive fusion protein biomaterials", American Chemical Society Spring Meeting. New Orleans, LA, March 2024.

[74] L. X. Wang (speaker), **D. J. Mai**. "Single-Molecule Dynamics of Confined Branched Polymers", American Physical Society March Meeting. Minneapolis, MN, March 2024.

[73] E. L. Quirk (speaker), M. C. Burroughs, B. M. Wirtz, T. H. Schloemer, D. N. Congreve, **D. J. Mai**. "Engineering photo-responsive recyclability into polymer networks for sustainable 3D printing", American Physical Society March Meeting. Minneapolis, MN, March 2024.

[72] L. X. Wang, **D. J. Mai** (poster). "High-throughput fabrication of geometrically complex nanoenvironments for single-molecule fluorescence microscopy", American Physical Society March Meeting. Minneapolis, MN, March 2024.

[71] E. L. Quirk, M. C. Burroughs, B. M. Wirtz, T. H. Schloemer, D. N. Congreve, **D. J. Mai** (poster). "Dynamic mechanical properties during formation and degradation of star polymer hydrogels", American Physical Society March Meeting. Minneapolis, MN, March 2024.

[70] M. C. Burroughs (speaker), E. L. Quirk, T. H. Schloemer, B. M. Wirtz, D. N. Congreve, **D. J. Mai**. "Influence of polymer architecture on the reversible photocrosslinking of hydrogel networks", American Institute of Chemical Engineers Annual Meeting. Orlando, FL, November 2023.

[69] M. C. Burroughs (speaker), T. H. Schloemer, D. N. Congreve, **D. J. Mai**. "Gelation dynamics during photocrosslinking of polymer nanocomposite hydrogels", American Institute of Chemical Engineers Annual Meeting. Orlando, FL, November 2023.

[68] Q. Zhou, B. M. Wirtz, T. H. Schloemer, D. N. Congreve, **D. J. Mai** (speaker). "Micellar encapsulation of organic upconversion systems to increase the penetration depth of UV light in aqueous environments", American Institute of Chemical Engineers Annual Meeting. Orlando, FL, November 2023.

[67] A. P. Gudinas, I. Tavarez, M. P. Chang, **D. J. Mai** (speaker). "Molecular-scale mechanics of calcium-responsive repeat proteins", American Institute of Chemical Engineers Annual Meeting. Orlando, FL, November 2023.

[66] M. A. Morris (speaker), Y. J. Yang, **D. J. Mai**, B. D. Olsen. "Engineered Selective Biotoxin-Binding Hydrogels for Barrier Membranes", American Institute of Chemical Engineers Annual Meeting. Orlando, FL, November 2023.

[65] M. C. Burroughs (speaker), T. H. Schloemer, D. N. Congreve, **D. J. Mai**. "Gelation dynamics and reversibility of photocrosslinkable polymer nanocomposite hydrogels", American Chemical Society Fall Meeting. San Francisco, CA, August 2023. **PMSE Future Faculty Symposium.**

[64] M. C. Burroughs, L. Nieman, L. X. Wang, **D. J. Mai** (poster). "Hybrid synthesis of bottlebrush DNA polymers for single-molecule rheology", XIXth International Congress on Rheology. Athens, Greece, July 2023.

[63] M. C. Burroughs (speaker), T. H. Schloemer, D. N. Congreve, **D. J. Mai**. "Gelation dynamics and reversibility of photocrosslinkable polymer nanocomposite hydrogels", XIXth International Congress on Rheology. Athens, Greece, July 2023.

[62] M. C. Burroughs, T. H. Schloemer, D. N. Congreve, **D. J. Mai** (speaker). "Gelation dynamics during photocrosslinking of polymer nanocomposite hydrogels", American Chemical Society Spring Meeting. Indianapolis, IN, March 2023. **2023 Spring Arthur K. Doolittle Award.**

[61] Q. Zhou (speaker), B. M. Wirtz, T. H. Schloemer, M. C. Burroughs, M. Hu, P. Narayanan, J. Lyu, A. Gallegos, C. Layton, **D. J. Mai**, D. N. Congreve. "Spatially controlled UV Light Generation at Depth by Upconversion Micelles", American Chemical Society Spring Meeting. Indianapolis, IN, March 2023.

[60] M. C. Burroughs (speaker), T. H. Schloemer, D. N. Congreve, **D. J. Mai**. "Gelation dynamics during photocrosslinking of polymer nanocomposite hydrogels", American Physical Society March Meeting. Las Vegas, NV, March 2023.

[59] L. X. Wang (speaker), **D. J. Mai**. "Single-Molecule Studies of Confined Branched Polymers", American Physical Society March Meeting. Las Vegas, NV, March 2023.

[58] B. M. Wirtz (speaker), Q. Zhou, T. H. Schloemer, M. Hu, **D. J. Mai**, D. N. Congreve. "Performing UV photochemistry with blue light using triplet fusion upconversion micelles", American Physical Society March Meeting. Las Vegas, NV, March 2023.

[57] A. P. Gudinas (speaker), M. P. Chang, **D. J. Mai**. "Molecular-scale mechanical properties of calcium-responsive proteins", American Physical Society March Meeting. Las Vegas, NV, March 2023.

[56] M. P. Chang, W. Huang, A. P. Gudinas, S. Wakatsuki, **D. J. Mai** (poster). "Determining Sequence–Structure Relationships for Calcium-Responsive Repeat Proteins", American Physical Society March Meeting. Las Vegas, NV, March 2023.

[55] I. J. Tavarez, A. P. Gudinas, **D. J. Mai** (poster). "Enzyme-mediated polyprotein conjugation for single-molecule force spectroscopy", American Physical Society March Meeting. Las Vegas, NV, March 2023. **Third Place, Journal of Polymer Science/DPOLY Poster Prize.**

[54] A. Dhawan, L. X. Wang, **D. J. Mai** (poster). "Fabrication of High Aspect Ratio Nanoconfined Environments for Single-Molecule Experiments", American Physical Society March Meeting. Las Vegas, NV, March 2023.

[53] M. P. Chang (speaker), **D. J. Mai**. "Sequence Control of Bioinspired Calcium-Responsive Protein Polymers", American Physical Society March Meeting. Las Vegas, NV, March 2023.

[52] M. C. Burroughs, T. H. Schloemer, D. N. Congreve, **D. J. Mai** (poster). "Effect of polymer architecture on gelation and reversibility in photocrosslinkable polymer hydrogels", American Physical Society March Meeting. Las Vegas, NV, March 2023.

[51] M. C. Burroughs, T. H. Schloemer, D. N. Congreve, **D. J. Mai** (poster). "Gelation dynamics during photocrosslinking of polymer nanocomposite hydrogels", Colloidal, Macromolecular, and Polyelectrolyte Solutions Gordon Research Conference. Ventura, CA, November 2022.

[50] M. P. Chang, A. P. Gudinas, W. Huang, **D. J. Mai** (speaker). "Structure and Mechanics of Calcium-Responsive Protein Hydrogels", Society of Rheology, 93rd Annual Meeting. Chicago, IL, October 2022.

[49] M. P. Chang (speaker), **D. J. Mai**. "Leveraging Repetitive Protein Polymers to Engineer Calcium-Responsive Soft Materials", American Physical Society March Meeting. Chicago, IL, March 2022.

[48] A. P. Gudinas, M. P. Chang, **D. J. Mai** (poster). "Molecular-scale mechanical properties of calcium-responsive proteins", American Physical Society March Meeting. Chicago, IL, March 2022.

[47] L. X. Wang, **D. J. Mai** (poster). "Single-Molecule Studies of Confined Branched Polymers", American Physical Society March Meeting. Chicago, IL, March 2022.

[46] M. P. Chang, **D. J. Mai** (speaker). "Integration of Calcium Responsiveness into Self-Healing Protein Hydrogels through Consensus Repeat Sequence Engineering", American Institute of Chemical Engineers Annual Meeting. Boston, MA, November 2021.

[45] M. A. Morris (speaker), R. Bataglioli, **D. J. Mai**, Y. J. Yang, J. M. Paloni, C. E. Mills, Z. Schmitz, E. A. Ding, A. C. Huske, B. D. Olsen. "A Rapid Screening Platform for Protein Expression to Enable Materials Development", American Institute of Chemical Engineers Annual Meeting. Boston, MA, November 2021.

[44] **D. J. Mai** (speaker), Y. J. Yang, B. D. Olsen. "Engineering Selective Biomolecular Transport in Nucleoporin-like Protein Hydrogels", American Institute of Chemical Engineers Annual Meeting. Orlando, FL, November 2019.

[43] C. E. R. Edwards, **D. J. Mai** (speaker), S. Tang, B. D. Olsen. "Molecular Anisotropy and Rearrangement as Mechanisms of Toughness and Extensibility in Entangled Physical Gels", American Institute of Chemical Engineers Annual Meeting. Orlando, FL, November 2019.

[42] B. D. Olsen (speaker), Y. J. Yang, **D. J. Mai**. "Nucleoporin-Like Proteins and Bioinspired Gels", 258th American Chemical Society National Meeting. San Diego, CA, August 2019.

[41] **D. J. Mai** (poster). "Molecular-Scale Engineering of Functional and Responsive Biopolymers", American Institute of Chemical Engineers Annual Meeting. Pittsburgh, PA, October 2018.

[40] C. Edwards, **D. J. Mai** (speaker), S. Tang, B. D. Olsen. "Uniaxial Extension of Associative Proteins Reveals Chain Alignment Mechanism in Highly Extensible and Tough Protein Hydrogels", American Institute of Chemical Engineers Annual Meeting. Pittsburgh, PA, October 2018.

[39] **D. J. Mai** (speaker), Y. J. Yang, A. C. Huske, T. J. Dursch, B. D. Olsen. "Engineering Nucleoporin-Inspired Hydrogels to Control Biomolecular Transport", American Institute of Chemical Engineers Annual Meeting. Pittsburgh, PA, November 2018.

[38] C. Edwards, **D. J. Mai**, S. Tang, B. D. Olsen (poster). "Mechanism of high extensibility and toughness in entangled associative protein hydrogels ", 256th American Chemical Society National Meeting, Boston, MA, August 2018.

[37] **D. J. Mai**, Y. J. Yang, T. J. Dursch, B. D. Olsen (poster). "Engineering Hierarchical Polymers to Control Biomolecular Transport", Polymer Physics Gordon Research Conference. Mount Holyoke, MA, July 2018.

[36] B. D. Olsen (speaker), **D. J. Mai**, Y. J. Yang. "Dynamic Bonding in Nucleoporin-Like Protein Materials", 255th American Chemical Society National Meeting. New Orleans, LA, March 2018.

[35] B. D. Olsen (speaker), S. Tang, **D. J. Mai**, J. Ramirez, T. J. Dursch, Y. J. Yang. "Skipping Polymer Physics", American Physical Society March Meeting. Los Angeles, CA, March 2018.

[34] C. Edwards, **D. J. Mai**, S. Tang, B. D. Olsen (poster). "Mechanism of High Extensibility in Entangled Associative Protein Hydrogels", American Physical Society March Meeting. Los Angeles, CA, March 2018. **First Place, Journal of Polymer Science/DPOLY Poster Prize.**

[33] **D. J. Mai** (speaker), Y. J. Yang, B. D. Olsen. "Selective Biomolecular Transport due to Structure, Affinity, and Diffusion in Nucleoporin-Like Hydrogels", American Physical Society March Meeting. Los Angeles, CA, March 2018.

[32] Y. J. Yang (speaker), S. Li, **D. J. Mai**, B. D. Olsen. "Site-Mutation of Nucleoporin Consensus Repeats for Understanding Selective Transport of Biomolecules", American Physical Society March Meeting. Los Angeles, CA, March 2018.

[31] Y. J. Yang, **D. J. Mai**, B. D. Olsen (poster). "Nucleoporin-Mimetic Selective PEG Hydrogel Filter for Antibody Separation", Chemical and Biological Defense Science & Technology Conference. Long Beach, CA, November 2017.

[30] **D. J. Mai** (speaker), Y. J. Yang, T. J. Dursch, B. D. Olsen. "New Mechanism for Selective Macromolecular Filtration in Polymer Networks", 254th American Chemical Society National Meeting. Washington, DC, August 2017. **Selected from PMSE Oral Presentation Abstracts for Sci-Mix Poster Session.**

[29] Y. J. Yang (speaker), **D. J. Mai**, B. D. Olsen. "Engineering Nucleoporin-Mimetic Polymer Hydrogels for Selective Filtration of Antibodies", 254th American Chemical Society National Meeting. Washington, DC, August 2017.

[28] A. Saadat (speaker), **D. J. Mai**, B. Khomami, C. M. Schroeder. "Brownian Dynamics Simulations of Single Comb DNA Molecules", Society of Rheology, 88th Annual Meeting. Tampa, FL, February 2017.

[27] A. Saadat, **D. J. Mai**, B. Khomami, C. M. Schroeder (poster). "Dynamics of Linear and Comb DNA Solutions Using Efficient Brownian Dynamics Techniques", American Institute of Chemical Engineers Annual Meeting. San Francisco, CA, November 2016.

[26] C. M. Schroeder (speaker), **D. J. Mai**, Y. Zhou. "Single Molecule Rheology of Branched Polymers and Large Amplitude Oscillatory Extension", XVIIth International Congress on Rheology. Kyoto, Japan, August 2016.

[25] **D. J. Mai**, A. B. Marciel, C. E. Sing, C. M. Schroeder (poster). "Single Molecule Dynamics of Branched DNA Polymers", Polymer Physics Gordon Research Conference. Mount Holyoke, MA, July 2016.

[24] **D. J. Mai** (speaker), C. M. Schroeder. "Single Molecule Dynamics of Branched DNA Polymers", Polymer Physics Gordon Research Seminar. Mount Holyoke, MA, July 2016.

[23] **D. J. Mai** (speaker), C. E. Sing, C. M. Schroeder. "Single Molecule Dynamics of Branched DNA Polymers", American Physical Society March Meeting. Baltimore, MD, March 2016.

[22] **D. J. Mai** (speaker), A. B. Marciel, C. M. Schroeder. "Synthesis, Characterization, and Single Molecule Dynamics of Branched DNA Polymers", American Institute of Chemical Engineers Annual Meeting. Salt Lake City, UT, November 2015. **Finalist, Excellence in Graduate Polymer Research Session.**

[21] **D. J. Mai** (speaker), C. E. Sing, C. M. Schroeder. "Topology-Controlled Relaxation of Branched DNA Polymers", American Institute of Chemical Engineers Annual Meeting. Salt Lake City, UT, November 2015.

[20] C. M. Schroeder (speaker), **D. J. Mai**. "Single Molecule Dynamics of DNA Comb Polymers", Society of Rheology, 87th Annual Meeting. Baltimore, MD, October 2015.

[19] E. M. Horstman, **D. J. Mai**, Y. Li, R. Bhargava. "A Program for Graduate Women in Engineering Pursuing Academic Careers (iFEAT: Illinois Female Engineers in Academia Training)" (poster), American Society of Engineering Education Annual Meeting. Seattle, WA, June 2015.

[18] Y. Li (speaker), **D. J. Mai**, E. M. Horstman, R. Bhargava. "Preparing Female Engineering Doctoral Students for the Academic Job Market through a Training Program Inspired by Peer Review", American Society of Engineering Education Annual Meeting. Seattle, WA, June 2015.

[17] **D. J. Mai**, A. B. Marciel, S. L. Kumar (speaker), C. M. Schroeder. "Single Molecule Observation of Topology-Controlled Branched Polymer Relaxation", American Physical Society March Meeting. San Antonio, TX, March 2015.

[16] A. B. Marciel, **D. J. Mai**, C. M. Schroeder (poster). "Synthesis of Biomimetic Branched Polymer Architectures", American Physical Society March Meeting. San Antonio, TX, March 2015. **First Place, Journal of Polymer Science/DPOLY Poster Prize.**

[15] A. B. Marciel, **D. J. Mai**, C. M. Schroeder. "Synthesis of Biomimetic Branched Polymer Architectures" (poster), Materials Research Society Fall Meeting. Boston, MA, December 2014. **Nominated for Best Poster Award.**

[14] **D. J. Mai** (speaker), C. M. Schroeder. "Relaxation of Single Comb Polymers", American Institute of Chemical Engineers Annual Meeting. Atlanta, GA, November 2014.

[13] **D. J. Mai**, A. B. Marciel, C. M. Schroeder (poster). "Single Molecule Characterization of Dual-Colored DNA Comb Polymers", American Institute of Chemical Engineers Annual Meeting. Atlanta, GA, November 2014.

[12] **D. J. Mai**, A. B. Marciel, C. M. Schroeder. "Single Molecule Characterization of Dual-Colored DNA Comb Polymers" (poster), WE14 (Society of Women Engineers Annual Conference). Los Angeles, CA, October 2014. **Finalist in the Collegiate Poster Competition.**

[11] **D. J. Mai** (speaker), A. B. Marciel, C. M. Schroeder. "Dual-Colored DNA Comb Polymers for Single Molecule Rheology", 18^{th} Annual Conference of the Chinese American Chemical Society – Great Lakes Chapter. Abbott Park, IL, May 2014. **Awarded Third Prize in the Student Presentation Competition.**

[10] **D. J. Mai** (speaker), A. B. Marciel, C. M. Schroeder. "Dual-Colored DNA Comb Polymers for Single Molecule Rheology", American Physical Society March Meeting. Denver, CO, March 2014.

[9] A. B. Marciel (speaker), **D. J. Mai**, C. M. Schroeder. "Synthesis of Biomimetic Branched Polymer Architectures", American Physical Society March Meeting. Denver, CO, March 2014.

[8] **D. J. Mai**, A. B. Marciel, C. Brockman, C. M. Schroeder (poster). "Flexible Branched Polymers for Single Molecule Rheology", *Journey through Science Day* by the New York Academy of Sciences & PepsiCo. New York, NY, December 2013. **Best Method Award, Poster Competition.**

[7] A. B. Marciel (speaker), **D. J. Mai**, C. M. Schroeder. "Synthesis of Biomimetic Branched Polymer Architectures", Materials Research Society Fall Meeting. Boston, MA, December 2013.

[6] **D. J. Mai** (speaker), A. B. Marciel, C. M. Schroeder. "Template-Directed Synthesis of Structurally Defined Branched Biopolymers", American Institute of Chemical Engineers Annual Meeting. San Francisco, CA, November 2013.

[5] **D. J. Mai**, A. B. Marciel, C. Brockman, C. M. Schroeder (poster). "Flexible Branched Polymers for Single Molecule Rheology", American Institute of Chemical Engineers Annual Meeting. San Francisco, CA, November 2013. **Second Place, Area 1J (Fluid Dynamics) Poster Competition.**

[4] A. B. Marciel, C. A. Brockman, **D. J. Mai**, C. M. Schroeder. "Synthesis and Supramolecular Assembly of Biomimetic Polymers" (poster), GRC: Gordon Research Conference on Self-Assembly and Supramolecular Chemistry. Les Diablerets, Switzerland, May 2013.

[3] A. B. Marciel, C. A. Brockman, **D. J. Mai**, C. M. Schroeder. "Template-Directed Synthesis and Hierarchical Assembly of Nucleotidomimetic Polymers" (poster), Materials Research Society Fall Meeting. Boston, MA, November 2012.

[2] E. J. Petersen, R. A. Pinto, **D. J. Mai**, P. F. Landrum, L. Zhang, Q. Huang, X. Shi, W. J. Weber, Jr. "Environmental Behaviors of Polyethyleneimine (PEI)-Coated Multi-Walled Carbon Nanotubes" (poster), 3^{rd} International Conference on Advanced Materials. Agadir, Morocco, September 2010.

[1] E. J. Petersen, R. A. Pinto, **D. J. Mai**, P. F. Landrum, L. Zhang, Q. Huang, X. Shi, W. J. Weber, Jr. "Bioaccumulation and Sorption Behaviors of Polyethyleneimine (PEI)-Coated Multi-Walled Carbon Nanotubes" (poster), Sigma Xi NIST Postdoctoral Poster Presentation. Gaithersburg, MD, February 2010.

Research Support

[16] "Waste to Weave: From Byproducts to Breakthrough Materials", Bezos Earth Fund, June 2026–May 2029. Role: Co-PI. PI: Ting Xu. Co-PIs: Sho Takatori, Andy Spakowitz

[15] "Biomining rare-earth elements to upgrade unconventional ores for electricity technologies", Stanford Sustainability Accelerator, June 2025–September 2026. Role: PI. Co-PI: David Zhen Yin

[14] "Degradable, Renewable, and Scalable Plastics with Competitive Performance", Stanford Sustainability Accelerator, June 2025–Dec 2026. Role: Co-PI. Co-PIs: Matt Kanan, Bob Waymouth

[13] "Elucidating the Multiphysical Properties of Mycelium Biocomposite Foams for Scalable, Energy-efficient Thermal Insulation", Stanford Sustainability Accelerator, June 2025–July 2026. Role: Co-PI. Co-PI: Debbie Senesky

[12] "*De novo* design of metal-binding proteins as biosorbents for critical mineral recovery", Stanford Shriram Synthetic Biology for Sustainability Seed Grant, May 2025–April 2027. Role: PI. Co-PI: Possu Huang

[11] "Expanding Stanford's BioAFM Capabilities", Community of Shared Research Platforms (c-ShARP) Instrumentation Enhancement Program, Stanford Vice Provost and Dean of Research, September 2024–August 2025. Role: co-PI. Co-PIs: Nadezda Makarova, Natalie Torok, Christine Jacobs-Wagner, Jonathan Mulholland, David Lenzi, Christina Newcomb

[10] "Single-Molecule Studies of Ion-Binding Proteins for Heavy Metal Sequestration", International Research Exploration Seed Grant, Stanford Vice Provost and Dean of Research, June 2024–June 2025. Role: PI. Co-PI: Bizan Balzer.

[9] "Engineering Optically Recyclable Polymer Resins for Sustainable Additive Manufacturing", Process Systems, Reaction Engineering, and Molecular Thermodynamics Program (CBET), National Science Foundation, April 2024–March 2027. Role: PI. Co-PI: Dan Congreve

[8] "Atomic Force Microscope for Single-Molecule Investigations of Biomolecular Actuation by Ion-Responsive Repeat Proteins", Defense University Research Instrumentation Program (DURIP), Air Force Office of Scientific Research, February–December 2024. Role: PI. Co-PIs: Jonathan Mulholland, Christina Newcomb, David Lenzi

[7] "Multiplexed Fabrication of Transparent Biomimetic Nanodevices", Community of Shared Research Platforms (c-ShARP) Voucher Program, Stanford Vice Provost and Dean of Research, January–December 2024. Role: PI. Co-PIs: Lavendra Mandyam, Louis Wang

[6] "Anthracene-Directed Reinforcement and Stabilization of Polymer Nanocomposites", Doctoral New Investigator Award, American Chemical Society Petroleum Research Fund, September 2023–August 2025. Role: PI.

[5] "Structure of Ion-Binding Repeat Proteins for Biomolecular Actuation", Macromolecular Structure Knowledge Center Training Program, Sarafan ChEM-H, March 2023–August 2024. Role: PI.

[4] "Engineering Biomolecular Actuators from Ion-Responsive Repeat Proteins", Young Investigator Research Program, Air Force Office of Scientific Research, June 2022–May 2025. Role: PI.

[3] "Engineering biolubrication at the molecular scale: a microfluidic platform to study tribological properties of bottlebrush polymers", Arnold O. Beckman Postdoctoral Fellowship (Mike Burroughs), Arnold and Mabel Beckman Foundation, September 2022–August 2024. Role: co-PI/Faculty Mentor. Co-PI: Mike Burroughs

[2] "A Circular 3D-Printing Economy Enabled by Photon Upconversion", Precourt Pioneering Projects Grant for Re-inventing Plastics and their Lifecycle of Use, Precourt Institute for Energy and Stanford University, October 2021–September 2023. Role: Co-PI. Co-PIs: Dan Congreve, Yan Xia

[1] "Nanostructural Dynamics of Muscle-Mimetic Protein Actuators", Seed Grant for New Science and Technology Ideas Exploiting the Capabilities of X-ray Lasers, Linac Coherent Light Source (LCLS) and Stanford University, October 2020–December 2021. Role: PI. Co-PIs: Soichi Wakatsuki, Mark Hunter

Experimental Resource Allocations

[7] "BioSAXS of native black widow major ampullate silk dope in water and under controlled chaotropic perturbations", Proposal S-XV-RAS-12F5, SLAC National Accelerator Laboratory, Stanford Synchrotron Radiation Light Source (SSRL), Bio-SAXS 4-2, March 2026-July 2026. Role: co-PI (PI: Gregory Holland, San Diego State University).

[6] "Ion-Responsive Nanostructure of Muscle-Mimetic Protein Actuators", Proposal S-XV-ST-6057, SLAC National Accelerator Laboratory, Stanford Synchrotron Radiation Light Source (SSRL), Bio-SAXS 4-2, May 2022-August 2025.

[5] "Characterizing the Network Structure of Supramolecular Hydrogels for Drug Delivery Applications", Proposal 30254, Oak Ridge National Laboratory (ORNL), High Flux Isotope Reactor, Bio-SANS CG-3, July 2023.

[4] "Characterizing the Network Structure of Supramolecular Hydrogels for Drug Delivery Applications", Proposal 27951, Oak Ridge National Laboratory (ORNL), High Flux Isotope Reactor, Bio-SANS CG-3, March 2022.

[3] "Structure of protein-polymer materials for selective bioseparations", Proposal 19847, Oak Ridge National Laboratory (ORNL), High Flux Isotope Reactor, Bio-SANS CG-3, May 2018.

[2] "Structure of protein-polymer materials for selective bioseparations", Proposal S37-07, NIST Center for Neutron Research, NG-7 SANS, March 2018.

[1] "Biophysical characterization of protein-polymer materials for selective bioseparations", Proposal 18744, Oak Ridge National Laboratory (ORNL), High Flux Isotope Reactor, Bio-SANS CG-3, September 2017.

Service to the Scientific Community

[18] APS DPOLY Membership and Publicity Committee, **Member** (2026-present)

[17] AIChE Polymers (Area 08A), **Vice Chair** (2023-2024) and **Chair** (2024-2025)

[16] ACS PMSE Volunteer, **Poster Judge** (2024) and **Doolittle Award Judge** (2025)

[15] APS DPOLY Executive Committee, **Early Career Member-at-Large** (2022-2024)

[14] AIChE Fluids (Area 01J) Programming Committee, **Member** (2020-present)

[13] AIChE 35 Under 35 Award Steering Committee, **Member** (2023)

[12] **Session Chair/Co-Chair**, American Institute of Chemical Engineering

- 2026 Complex Fluids: Polymeric and Macromolecular Systems (Area 1J)
- 2025 Fluids & Transport in Biological Materials (Area 1J)
- 2024 Characterization of Biomaterials and Biological Systems (Area 1J)
- 2024 Honorary Session for Shaoyi Jiang (Areas 8A/8B)
- 2024 Topical Conference: Sustainable, Nature-Inspired, Green Materials for Energy, Environmental and Biomedical Applications
- 2023 Soft and Active Systems (Area 1J)
- 2023 Area Plenary: Emerging Areas in Polymer Science and Engineering (Area 8A)
- 2022 Rheology of Biomaterials and Biological Systems (Area 1J)

2022 Excellence in Graduate Polymer Research (Area 8A)
2021 Characterization of Biomaterials and Biological Systems (Area 1J)
2021 Biopolymers (Area 8A)
2021 Renewable Polymers and Intermediates Technology (Areas 8A/12A)
2020 Microfluidic and Nanoscale Flows: Separations and Particulates (Area 1J)
2020 Polymer Networks and Gels (Area 8A)
2020 Development of Renewable Polymers and Intermediates (Areas 8A/12A)
2019 Bio-Based Polymers (Area 8A)
2019 Process Innovations on Renewable Polymers and Biobased Intermediates (Areas 8A/12A)

[11] **Session Organizer**, American Physical Society
2023 Single-Molecule Characterization of Polymers and Soft Matter (DPOLY)
2022 Single-Molecule Characterization of Polymers and Soft Matter (DPOLY)
2021 Optics and Photonics in Polymers and Soft Matter (DPOLY/DSOFT/DBIO/DAMOP)

[10] **Session Organizer**, Society of Rheology
2022 Rheology of Gels, Glasses, and Jammed Systems
2021 Active and Biological Materials

[9] **Symposium Organizer**, American Chemical Society
2027 Rheology of Polymer Materials (PMSE)
2022 Molecular Design of Polymers with Multi-scale Mechanical Properties (PMSE)

[8] **Symposium Organizer**, Materials Research Society
2027 Advances in Protein and Peptide Self-Assemblies as Novel Biomaterials
2024 Bio-based and Biomimetic Polymers in Soft Robotics

[7] Gordon Research Conferences (GRC) and Seminars (GRS)
2025 **Discussion Leader**, Polymers GRC, Mount Holyoke, MA
2025 **Discussion Leader**, Peptide Materials GRC, Pomona, CA
2024 **Discussion Leader**, Polymer Physics GRC, Mount Holyoke, MA
2024 **Panelist**, Polymer Physics GRS, Mount Holyoke, MA
2022 **Discussion Leader**, Polymer Physics GRC, Mount Holyoke, MA
2022 **Panelist**, Colloidal, Macromolecular, and Polyelectrolyte Solutions GRS, Ventura, MA
2018 **Chair**, Polymer Physics GRS, Mount Holyoke, MA

[6] *SPE Polymer Education*, **Editorial Board Member** (2025-present)

[5] *ACS Macro Letters*, **Editorial Board Member** (2024-present)

[4] *Journal of Polymer Science*, **Editorial Board Member** (2023-present)

[3] *Journal of Polymer Science*, **Guest Editor**, Single-Molecule Studies in Polymer Science (2023-2024)

[2] **Manuscript Peer Reviewer** (alphabetical): *ACS Applied Materials & Interfaces*, *ACS Applied Polymer Materials*, *ACS Macro Letters*, *ACS Polymers Au*, *Advanced Materials*, *AIChE Journal*, *Bioconjugate Chemistry*, *Biomacromolecules*, *Biomicrofluidics*, *Chem*, *Chemical Reviews*, *ChemSystemsChem*, *Colloids and Surfaces A*, *Journal of the American Chemical Society*, *Journal of Polymer Science*, *Journal of Physical Chemistry*, *Langmuir*, *Macromolecular Chemistry and Physics*, *Macromolecular Rapid Communications*, *Macromolecules*, *Molecular Pharmaceutics*, *Nano Letters*, *Nature*, *Nature Chemistry*, *Nature Communications*, *Physical Review Fluids*, *Proceedings of the National Academy of Sciences*, *PRX Life*, *Science*, *Science Advances*, *Small*, *Soft Matter*, *Trends in Chemistry*

[1] **Grant and Resource Peer Reviewer**
2026 Stanford International Research Exploration Seed Grant
2026 Lawrence Berkeley National Laboratory Molecular Foundry, Proposal Review Board
2026 National Science Foundation (panel)
2026 American Chemical Society Petroleum Research Fund

2026 NSF BioPACIFIC Materials Innovation Platform
2025 Air Force Materials Laboratory, Materials Directorate
2025 NSF BioPACIFIC Materials Innovation Platform
2025 Oak Ridge National Lab Neutron Sciences, HFIR Bio-SANS CG-3
2025 Moore Experimental Physics Investigators Initiative
2025 Stanford Synthetic Biology for Sustainability
2025 Stanford c-ShARP Instrumentation & Enhancement Program
2024 American Chemical Society Petroleum Research Fund
2024 Oak Ridge National Lab Neutron Sciences, HFIR Bio-SANS CG-3
2024 Department of Energy, Basic Energy Sciences
2024 Stanford c-ShARP Instrumentation & Enhancement Program
2023 National Science Foundation (2 panels)
2023 Oak Ridge National Lab Neutron Sciences, HFIR Bio-SANS CG-3
2023 Stanford PRISM Baker Fellowship
2023 American Chemical Society Petroleum Research Fund
2022 National Science Foundation (panel)
2021 National Science Foundation (2 panels)
2020 American Chemical Society Petroleum Research Fund
2020 National Science Foundation (panel)
2020 Emergent Ventures COVID-19 Fast Grants
2019 MIT Chemical Engineering Communications Lab Postdoctoral Grants

University Service and Outreach Activities

[21] **Graduate Admissions Committee** (2025-present), Stanford Chemical Engineering

[20] **Diversifying Academia, Recruiting Excellence (DARE) Fellowship, Faculty Resource Advisor** (Dr. Kyra Yap, 2023-2025; Alexandra Ramos Figueroa, 2025-present), Stanford Office of the Vice Provost for Graduate Education

[19] **Enhancing Diversity in Graduate Education (EDGE), Faculty Mentor** (2022-2026), Stanford Office of the Vice Provost for Graduate Education

[18] **VPUE Research Experience for Undergraduates, Director** (2023-2025), Stanford Chemical Engineering

[17] **Undergraduate Studies Committee** (2022-2025), Stanford Chemical Engineering

[16] **AIChE Student Chapter, Faculty Advisor** (2020-2025), Stanford Chemical Engineering

[15] **Faculty Search Committee** (2023-2024), Stanford Chemical Engineering

[14] **Director of Finance and Operations Search Committee** (2023), Stanford Chemical Engineering

[13] **Graduate Curriculum Review Committee** (2020-2022), Stanford Chemical Engineering

[12] **Undergraduate Major Academic Advisor**, 7 active, 8 completed, Stanford Chemical Engineering

[11] **Undergraduate Honors Thesis Reader**, 2 completed, Stanford Chemical Engineering

[10] **Dissertation Reading Committee Member**, 5 active, 18 completed, Stanford Chemical Engineering

[9] **Defense Committee Member (non-reader or chair)**, 37 completed, Stanford Chemical Engineering, Applied Physics, Bioengineering, Chemistry, Electrical Engineering, Materials Science & Engineering

[8] Outreach: **Invited Panelist, Speaker, and/or Workshop Leader**
2026 Stanford Synthetic Biology × Sustainability, Idea-A-Thon Panel
2025 Stanford Sustainability Accelerator Kickoff, Engineering Life Panel
2025 Stanford New Student Orientation, We Are STEM Panel
2025 Stanford Engineering Research Introductions (SERIS)

2024 Fireside Chat for BIOS 420: Building Connections, Defining the Future of Biosciences
2024 AIChE Nanoscale Science & Engineering Forum (Path Towards Nanoscale Science & Engineering)
2024 AIChE Annual Student Conference Workshop (Demystifying Grad School for First-Generation Chemical Engineers)
2024 Gordon Research Seminar Mentor Panel (Polymer Physics: Mapping Your Career Phase Diagram in Polymer Physics)
2024 PoWER: Polymer Women Empowerment & Research Conference (Time Management Workshop)
2024 Stanford Bio-X Undergraduate Summer Research Program (USRP)
2024 Schmidt Science Fellows Global Meeting (Panel: Launching a Research Group)
2024 Stanford Engineering Research Introductions (SERIS)
2023 Strategic Preparation for Academic Resilience and Know-how (SPARK) Workshop (Interviews)
2022 Gordon Research Seminar Mentor Panel (Colloidal, Macromolecular, and Polyelectrolyte Solutions: Navigating a Rewarding Research Career)
2022 Stanford Polymer Collective Time Management Workshop
2022 Stanford Bio-X Undergraduate Summer Research Program (USRP)
2022 Stanford Engineering Research Introductions (SERIS)
2021 University of Delaware MRSEC Early Career Professional Development Workshop (Building a Lab from "Scratch")
2021 Strategic Preparation for Academic Resilience and Know-how (SPARK) Workshop (Negotiations)
2021 Stanford Summer Undergraduate Research Fellowship (SURF) Program (Paths to Academia)
2021 MIT CommLab Faculty Chalk Talk Workshop
2020 AIChE National Capital Local Section (NCS) 35 Under 35 Panel
2020 How Science Happens Podcast, Season 1 (most-downloaded episode)
2020 Virtual Academic Job Search Workshop (Interview and Hiring Myths)
2020 Stanford Exposure to Research and Graduate Education (SERGE) by the Black Engineering Graduate Students Association (BEGSA)
2020 Stanford Summer Academic Immersion and Leadership (SAIL) Program (What I Wish I Knew About Graduate School)
2020 Stanford Summer Undergraduate Research Fellowship (SURF) Program (Redefining Success and Normalizing Failure)
2015 AIChE Women's Initiative Committee Graduate Student Panel

[7] **Poster Judge** (2020, 2023, 2024), Stanford Polymer Collective Poster Symposium

[6] **Mentor** (2016-17), NetPals Program with MIT Chemical Engineering and Cambridge School Volunteers

[5] **Co-Founder** (2014-16), Illinois Female Engineers in Academia Training (iFEAT)

[4] **GradSWE Speaker Coordinator** (2014-15) & **Member** (2013-16), Society of Women Engineers at Illinois

[3] **Organizer** (2014) & **Volunteer** (2013), Worldwide Youth in Science and Engineering "Exploring Your Options" Program

[2] **President** (2012-13) & **First Year Representative** (2011-12), ChBE Graduate Student Advisory Council

[1] **Planning Committee Member** (2012), ChBE Graduate Research Symposium

Teaching Experience

[14] **Instructor**, Polymer Physics (CHEMENG 466), Elective Course, Stanford University, Spring 2024, Winter 2026

[13] **Instructor**, Chemical Engineering Thermodynamics (CHEMENG 110A), Undergraduate Required Course, Stanford University, Autumn 2020, Autumn 2021, Autumn 2022, Autumn 2023, Autumn 2024, Autumn 2025

[12] **Instructor**, Fundamentals and Applications of Spectroscopy (CHEMENG 345), Graduate Required Course, Stanford University, Winter 2020, Winter 2021, Spring 2022, Spring 2025

[11] **Co-Instructor**, Multi-Component and Multi-Phase Thermodynamics (CHEMENG 110B), Undergraduate Required Course, Stanford University, Winter 2024

[10] **Guest Lecturer**, Structure of Soft Matter (10.566), Elective Course, MIT, Winter 2016

[9] **Guest Lecturer**, Applied Mathematics in Chemical Engineering (CHBE 521), Graduate Required Course, University of Illinois, Fall 2015

[8] **Facilitator**, Microteaching Session, Graduate Academy for College Teaching, University of Illinois, Summer 2015

[7] **Guest Lecturer**, Polymer Science & Engineering (CHBE 456/594), Elective Course, University of Illinois, Spring 2013, Fall 2013

[6] **Teaching Assistant**, Thermodynamics (CHBE 321), Undergraduate Required Course, University of Illinois, Spring 2013

[5] **Teaching Assistant**, Applied Mathematics in Chemical Engineering (CHBE 521), Graduate Required Course, University of Illinois, Fall 2012

[4] **Instructional Aide**, Design for Energy Sustainability (ENGR 100), 1st Year Design Course, University of Michigan, Fall 2011

[3] **Grader**, Heat and Mass Transfer (CHE 342), Undergraduate Required Course, University of Michigan, Fall 2010

[2] **Instructional Aide**, Chemical Engineering Thermodynamics (CHE 330), Undergraduate Required Course, University of Michigan, Winter 2010

[1] **Peer Mentor**, Engineering Design for the Real World (ENGR 100), 1st Year Design Course, University of Michigan, Fall 2009

Graduate Research Trainees

[10] **Centaine S. Joseph**, Ph.D. Student, Stanford Graduate Fellow, Chemical Engineering, Apr. 2026 – present
Co-advised by Prof. Sarah Heilshorn (Materials Science & Engineering)

[9] **Vic M. Hempstead**, Ph.D. Candidate, NSF Graduate Research Fellow, Chemical Engineering, May 2025 – present

[8] **Michelle C. Quan**, Ph.D. Candidate, Stanford Interdisciplinary Graduate Fellow, Chemical Engineering, Mar. 2024 – present
Co-advised by Prof. Soichi Wakatsuki (Structural Biology)

[7] **Eleanor L. Quirk**, Ph.D. Candidate, Mason Fellow, Chemical Engineering, Mar. 2023 – present

[6] **Brendan M. Wirtz**, Ph.D. Chemical Engineering, NSF Graduate Research Fellow, Mar. 2022 – Sept. 2026
Dissertation: Protease-Driven Coacervation of Protein-Based Materials

[5] **Gatha M. Shambharkar**, M.S. Materials Science and Engineering, Jan. 2022 – June 2023
Thesis: Response of RTX proteins to cations beyond calcium
Next role: Manufacturing Engineer, Slingshot Biosciences (Emeryville, CA)

[4] **Alana P. Gudinas**, Ph.D. Physics, NSF Graduate Research Fellow, Mar. 2021 – Sept. 2026
Dissertation: Ion-Selective Structural Transitions of Disordered Repeat Proteins

[3] **Natasha Jagnandan**, M.S. Chemical Engineering, March 2021 – June 2023

[2] **Lucy X. Wang**, Ph.D. Materials Science and Engineering, Dec. 2020 – Sept. 2026
Dissertation: Single-Molecule Studies of Confined Comb Polymers

[1] **Marina P. Chang**, Ph.D. Materials Science and Engineering, Jan. 2020 – June 2026
Dissertation: Leveraging Sequence Repetition to Engineer Calcium-Responsive Protein Polymers
Next role: Postdoctoral Researcher, Garcia Lab, University of Maryland, Baltimore County

Postdoctoral Research Trainees

[4] **Ziyu (Tracy) Cui**, Stanford Sustainability Accelerator Postdoctoral Fellow, Apr. 2026 – present

[3] **Carlos D. Díaz-Marín**, Stanford Energy Postdoctoral Fellow, July 2025 – Aug. 2025
Next role: Assistant Professor of Energy Science and Engineering, Stanford University

[2] **Michael C. Burroughs**, Arnold O. Beckman Postdoctoral Fellow, Oct. 2021 – June 2024
Next role: Scientist II, Thintronics (Alameda, CA)

[1] **Ta-Chung Liu**, Stanford LEAP Visiting Postdoctoral Scholar, Apr. 2021 – Jan. 2022
Next role: Assistant Professor of Biomedical Engineering, National Chiao Tung University, Taiwan

Undergraduate and High School Research Trainees

[31] **Quinne Davis**, Stanford University, Undergraduate Research Assistant, Stanford ChemE, Summer 2026 – present

[30] **Jennifer Atta**, Stanford University, Undergraduate Research Assistant, Stanford ChemE, Autumn 2025 – present

[29] **Xinhui Li**, Peking University, Stanford Undergraduate Visiting Research (UGVR) Program, Summer 2025
Next role: Chemistry PhD Student, Cornell University

[28] **Amanda Rosario**, University of Puerto Rico - Mayaguez, Stanford Summer Undergraduate Research Fellowship (SURF) Program, Summer 2025

[27] **Isaac Frank**, The International School of San Francisco, High School Research Intern, Summer 2025

[26] **Joaquin Iglesias**, Stanford University, Undergraduate Research Assistant, Stanford ChemE REU, Spring 2025 – present

[25] **Cara Sambeth**, Stanford University, Undergraduate Research Assistant, Spring 2025 – Spring 2026

[24] **Paola Urbina Ramos**, University of Puerto Rico - Mayaguez, Stanford SURF Program, Summer 2024
Next role: Chemical Engineering PhD Student, Princeton University

[23] **Tianyi Hu**, Tsinghua University, Stanford UGVR Program, Summer 2024
Next role: Robotics PhD Student, University of Michigan, advised by S. Ceron

[22] **Camily Pereira dos Santos**, Stanford University, Undergraduate Research Assistant, Stanford ChemE REU, Spring – Summer 2024

[21] **Jesse Grayson**, Stanford University, Undergraduate Research Assistant, BioX Undergraduate Researcher, April 2024 – present

[20] **Allison Yun**, Stanford University, Stanford ChemE REU (2023), BioX Undergraduate Researcher (2024), June 2023 – August 2024
Next role: Medical Student, Harvard University

[19] **Ava Conyer**, Howard University, Stanford SURF Program, Summer 2023
Next role: Chemical Engineering MS Student and NYU Dean's Scholar, New York University

[18] **Yujia Bian**, Peking University, Stanford UGVR Program, Summer 2023
Next role: Chemical Engineering PhD Student, Stanford University, advised by A. Dunn & P. Fordyce

[17] **Kenny Hernandez**, Stanford University, Undergraduate Research Assistant, Stanford ChemE REU (2023), Autumn 2022 – Winter 2024

[16] **Peter Musenge**, St. Augustine's University, Stanford SURF Program, Summer 2022
Next role: Associate Data Scientist, Amgen; Current role: Biomedical Engineering PhD Student, Johns Hopkins University

[15] **Ke Jin**, Tsinghua University, Stanford UGVR Program, Summer 2022
Next role: Chemical Engineering PhD Student, University of Minnesota, advised by M. Mahanthappa

[14] **Lisa Nieman**, Stanford University, Stanford ChemE REU, Summer 2022 – June 2025
Next role: Chemical Engineering PhD Student, Northwestern University, advised by M. Wang & D. Tullman-Ercek

[13] **Isabella Tavarez**, Stanford University, Stanford ChemE REU, Summer 2022 – Winter 2023
Next role: Environmental Engineering PhD Student, University of Miami

[12] **Jefferson (J. D.) Pruett**, Stanford University, Undergraduate Research Assistant, Autumn 2021

[11] **Ankush Dhawan**, Stanford University, Stanford ChemE REU, Summer 2021
Next role: Electrical Engineering MS Student, Stanford University

[10] **Christopher Latham**, Stanford University, Stanford ChemE REU, Summer 2021
Next role: Process Engineer, Applied Materials

[9] **Andrea (Andy) Flores**, University of Puerto Rico - Mayaguez, Stanford SURF Program, Summer 2020
Next role: Bioengineering PhD Student, Stanford University, advised by P. Yang

[8] **Winnie Huang**, Stanford University, Stanford ChemE REU (2020), BioX Undergraduate Researcher (2021), June 2020 – June 2023.
Next role: Chemical Engineering PhD Student, Princeton University, advised by M. Sarazen & M. Lusardi

[7] **Amadou Sow**, Roxbury Community College, MIT/NSF MRSEC REU Program, Summer 2017

[6] **Andriana Velmahos**, MIT, High School Research Intern, Summer 2017
Next role: Undergraduate Student, Boston University

[5] **Allison Huske**, MIT, Undergraduate Research Assistant, Winter 2017 – Spring 2018
Next role: Public Health Associate, Center for Disease Control and Prevention

[4] **Zhiwei Zhang**, University of Illinois, Undergraduate Research Assistant, August 2015 – May 2017
Next role: Software Developer, DRW

[3] **Dylan Manuguerra**, University of Illinois, High School Research Intern, Summer 2015
Next role: B.S. Chemical Engineering, Rowan University

[2] **Sarah Kuhl**, University of Illinois, Undergraduate Research Assistant, Fall 2013 – Spring 2015
Next role: R & D Engineer, The Clorox Company

[1] **Xiaoxuan (Lily) Chen**, University of Illinois, Senior Honors Thesis, Fall 2013 – Spring 2015
Next role: Liquid Natural Gas Trading, ExxonMobil

Awards and Recognitions by Trainees

05/2026	V. M. Hempstead	2nd Place Poster Award, Stanford Polymer Collective
05/2026	M. C. Quan	Service Leadership Award, Stanford Department of Chemical Engineering
05/2026	E. L. Quirk	Science Outside the Lab Scholar, NNCI
04/2026	E. L. Quirk	Outstanding Graduate Award, SPE Golden Gate Section Education Expo
04/2026	M. C. Quan	Stanford Alumni Association Graduate Community Impact Award
04/2026	J. D. Grayson	Stanford Alumni Association Undergraduate Award of Excellence

03/2026	A. R. Rosario	Outstanding Student Poster Presentation Award, APS DPOLY
03/2026	A. R. Rosario	Undergraduate Travel Award, APS DPOLY
02/2026	A. P. Gudinas	Student Research Achievement Award, Biophysical Society
02/2026	B. M. Wirtz	Stanford Bio-X Travel Award
10/2025	M. C. Quan	Stanford Bio-X Travel Award
10/2025	E. L. Quirk	Student-Member Travel Grant, Society of Rheology
05/2025	M. C. Quan	Stanford Interdisciplinary Graduate Fellowship, Sarafan ChEM-H
04/2025	E. L. Quirk	Mason Fellowship, Stanford Department of Chemical Engineering
04/2025	E. L. Quirk	Stanford Alumni Association Graduate Community Impact Award
04/2025	B. M. Wirtz	Stanford Alumni Association Graduate Community Impact Award
04/2025	L. Nieman	Stanford Alumni Association Undergraduate Award of Excellence
03/2025	M. C. Burroughs	Best Poster Award, ACS Polymeric Materials Science and Engineering
03/2025	M. C. Burroughs	Stanford Bio-X Travel Award
03/2025	E. L. Quirk	Stanford Bio-X Travel Award
12/2024	M. C. Burroughs	Rising Stars in Soft and Biological Matter Symposium
10/2024	C. P. dos Santos	Rice University Gulf Coast Undergraduate Research Symposium, Best Overall Presentation in Chemical & Biomolecular Engineering
10/2024	B. M. Wirtz	AIChE Area 08A Excellence in Graduate Student Polymer Research Finalist
09/2024	B. M. Wirtz	Service Leadership Award, Stanford Department of Chemical Engineering
09/2024	L. X. Wang	Poster Award, Stanford Bio-X
09/2024	A. G. Yun	Academic Travel Award, Stanford Bio-X
09/2024	A. G. Yun	Poster Award, Stanford Bio-X
05/2024	B. M. Wirtz	Centennial Teaching Assistant Award (CHEMENG 110A)
05/2024	A. P. Gudinas	Stanford Alumni Association Graduate Community Impact Award
05/2024	A. P. Gudinas	Future Investigator Travel (FIT) Award, APS DSOFT
04/2024	A. P. Gudinas	Stanford Bio-X Travel Award
04/2024	E. L. Quirk	National Science Foundation GRFP Honorable Mention
04/2024	M. C. Quan	National Science Foundation GRFP Honorable Mention
04/2024	M. P. Chang	Stanford Bio-X Travel Award
03/2024	B. M. Wirtz	Stanford Bio-X Travel Award
03/2024	E. L. Quirk	Stanford Bio-X Travel Award
03/2024	L. X. Wang	Stanford Bio-X Travel Award
11/2023	M. C. Burroughs	Invited Postdoc Speaker, Georgia Tech Student Polymer Network (SPN)
8/2023	M. C. Burroughs	Distinguished Young Scholar Seminar (DYSS) Speaker, University of Washington Chemical Engineering
8/2023	M. C. Burroughs	Future Faculty Scholar, ACS Polymeric Materials Science and Engineering
8/2023	M. C. Burroughs	Stanford Bio-X Travel Award
7/2023	M. C. Burroughs	Future Investigator Travel (FIT) Award, APS DSOFT
7/2023	M. C. Burroughs	Student-Member Travel Grant, Society of Rheology
7/2023	B. M. Wirtz	BioPACIFIC Materials Innovation Platform Summer School
6/2023	W. Huang	Mason/Marsden Prize (awarded to an outstanding senior involved in research), Stanford Chemical Engineering
5/2023	A. P. Gudinas	Judges' Poster Award, Stanford Polymer Collective
3/2023	W. Huang	National Science Foundation Graduate Research Fellowship
3/2023	B. M. Wirtz	National Science Foundation Graduate Research Fellowship
3/2023	A. P. Gudinas	3rd Place Poster, APS Division of Polymer Physics
11/2022	W. Huang	North Carolina State University Future Leaders Symposium
7/2021	M. C. Burroughs	Arnold O. Beckman Postdoctoral Fellowship
4/2015	S. Kuhl	3rd Place Poster, Omega Chi Epsilon Undergraduate Research Symposium
4/2014	X. Chen	Intel Innovation Award for Outstanding Poster Presentation, University of Illinois Undergraduate Research Symposium (Office of Undergraduate Research)
4/2014	X. Chen	2nd Place Poster, Omega Chi Epsilon Undergraduate Research Symposium