ALBERT TIANXIANG LIU

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EDUCATION

2022 Postdoctoral Fellow, School of Medicine, Stanford University (Advisor: Steven Chu)
2020 Ph.D., Chemical Engineering, Massachusetts Institute of Technology
Thesis: Colloidal Electronics (Advisor: Michael S. Strano)
2014 B.S. with honor, Chemical Engineering, California Institute of Technology (**GPA**: 4.0/4.0)
Thesis: Nickel-Catalyzed Asymmetric Alkylation of α-Halo Boronic Esters (Advisor: Gregory C. Fu)
2012 B.A. with honor, Chemistry, Grinnell College, **Valedictorian** (**GPA**: 4.0/4.0)

ACADEMIC APPOINTMENTS

2022– **Assistant Professor**, Department of Chemical Engineering, University of Michigan
by courtesy, Macromolecular Science and Engineering Program, University of Michigan
by courtesy, Department of Materials Science and Engineering, University of Michigan

OTHER POSITIONS AND AFFILIATIONS

2025– Core Member, Biointerfaces Institute, University of Michigan
2024– Michigan Bioastronautics and Life Support Systems Project Team Advisor, University of Michigan
2024– ACS Chem & Bio Engineering, Early Career Advisory Board, American Chemical Society
2023–25 Academic Affairs Advisory Committee, University of Michigan Faculty Senate
2023– University of Michigan Student Chapter Advisor, American Institute of Chemical Engineers
2023– University of Michigan ChemE Car Advisor, American Institute of Chemical Engineers
2023– Division Chair, Nanoscale Science & Engineering Forum, American Institute of Chemical Engineers
2023–25 Area Chair, Composites, Materials Engineering & Science Division, American Institute of Chemical Engineers
2023– Nanoscale Horizons, Editorial Community Board, Royal Society of Chemistry
2020– ACS Materials Letters Early Career Advisory Board, American Chemical Society
2018–19 Graduate Programs Committee, Office of Graduate Education, MIT
2014 Facilities Engineering Intern, Chevron Energy Technology Company, Chevron U.S.A. Inc.

AWARDS AND HONORS

2025 Enhancing Engineering Education (E3) Award, CRLT-Engin, University of Michigan
2024 Faculty Development Fellowship, Center for Research on Learning and Teaching, University of Michigan
2024 MMRI Faculty Investigator Award, Michigan Materials Research Institute
2024 Packard Fellowships for Science and Engineering (finalist), David & Lucile Packard Foundation
2023 ACS PRF Doctoral New Investigator Award, American Chemical Society
2023 Michigan Bold Challenge BOOST Award, University of Michigan
2023 College of Engineering START Young Investigator Award, University of Michigan
2022 Semiconductor Technology REU Award, Intel Corporation
2020 SSC Rising Star, IEEE Solid-State Circuits Society
2020 Materials Research Society Graduate Student Award (Spring), Materials Research Society
2019 Excellence in Graduate Polymer Research, American Institute of Chemical Engineers
2019 Individual Accomplishment Citation, Dept. of Chemical Engineering, MIT
2019 Outstanding Graduate Teaching Assistant Award (for 10.65 – Chemical Reaction Engineering), MIT
2019 Teaching Development Fellowship, MIT
2018 Inorganic Materials Graduate Student Award (**1st place**), American Institute of Chemical Engineers
2018 PPG Polymer Engineering Award, Macromolecular Science & Engineering Symposium, University of Michigan
2018 Judge's Choice (**1st place team**), Harvard Surgical Program in Innovation, Harvard Medical School
2017 Materials Research Society Graduate Student Award (Fall), Materials Research Society
2017 Electronic & Photonic Materials Graduate Student Award, finalist, American Institute of Chemical Engineers
2017 Outstanding Graduate Teaching Assistant Award (for 10.50 – Transport Phenomena), MIT
2017 Goodwin Teaching Medal, finalist (nominated by Dept. of Chemical Engineering), MIT
2016 Carbon Nanomaterials Graduate Student Award (**1st place**), American Institute of Chemical Engineers
2014 Presidential Graduate Fellowship, MIT
2014 Gordon Wu Fellowship (declined), Princeton University
2014 Merck Index Award, Caltech, sponsored by Merck & Co., Inc.
2014 Tau Beta Pi, California Beta Chapter
2013 Jack E. Froehlich Memorial Award, Caltech

2013 David S. Koons Research Fellowship, Caltech
2013 Don Shepard Award, Caltech
2013 Andrew W. Archibald Prize for Highest Scholarship (**Valedictorian**), Grinnell
2013 Chemistry Alumni Award, Department of Chemistry, Grinnell
2013 Phi Beta Kappa, Iowa Beta Chapter
2011 ACS Polymer Chemistry Award, Polymer Education Committee, American Chemical Society
2011–13 Summer Undergraduate Research Fellowship (three semesters), Caltech
2011 Snyder Scholarship (declined), University of Illinois at Urbana-Champaign
2010 Mentored Advanced Project Fellowship, Grinnell
2010 Silver Medal, Grinnell College Team, Iowa Collegiate Mathematics Competition, University of Iowa
2009 Neil Klausner Award, Grinnell
2009–12 Dean's Lists (all semesters), Grinnell
2003 Silver Medal, National Mathematical Olympiad, Chinese Mathematical Society

PEER-REVIEWED JOURNALS (Google Scholar Profile)

(***** Equal contribution; † Corresponding author.)

2025 **(36)** Ma, R.; Sun, J.; Park, S.; Nikolla, F.; **Liu, A. T.**† Programmable cargo release from jet-printed microgel particles via an in situ ionic exchange method. *ACS Chem & Bio Engineering* **2025**, *accepted*.

2024 **(35)** Manion, M. L.; Doctor, J.; **Liu, A. T.**† Temporally resolved concentration profiling via computationally limited, distributed sensor nodes. *AIChE Journal* **2024**, *71 (2)*, e18681.

2024 **(34)** Manion, M. L.; **Liu, A. T.**† DNA augmented intracellular protein delivery via nanopore electroporation. *Matter* **2024**, *7 (8)*, 2727–9.

2024 **(33)** Zhang, G.; Yang, S.; Yang, J. F.; Gonzalez-Medrano, D.; Miskin, M. Z.; Koman, V. B.; Zeng, Y.; Li, S. X.; Kuehne, M.; **Liu, A. T.**; Brooks, A. M.; Kumar, M.; Strano, M. S.† High energy density picoliter-scale zinc-air microbatteries for colloidal robotics. *Science Robotics* **2024**, *9 (93)*, ade4642.

2023 **(32) Liu, A. T.**† Measuring Carrier Density and Mobility in Single-Walled Carbon Nanotubes via Nuclear Magnetic Resonance. *Nanoscale Horizons* **2023**.

2023 **(31) Liu, A. T.**; Hampel, M.; Yang, J. F.; Brooks, A. M.; Pervan, A.; Koman, V. B.; Zhang, G.; Kozawa, D.; Yang, S.; Goldman, D. I.; Miskin, M. Z.; Richa, A. W.; Randall, D.; Murphey, T. D.; Palacios, T.†; Strano, M. S.† Colloidal Robotics. *Nature Materials* **2023**, *22*, 1453–62.

2023 **(30)** Gong, X.; Kwak, S-Y.; Cho, S-Y.; Lundberg, D.; **Liu, A. T.**; McGee, M. K.; Strano, M. S.† Single-Molecule Methane Sensing Using Palladium-Functionalized nIR Fluorescent Single-Walled Carbon Nanotubes. *ACS Sensors*, **2023**, *8 (11)*, 4207–15.

2023 **(29)** Kozawa, D.; Li, X. S.; Ichihara, T.; Rajan, A. G.; Gong, X.; He, G.; Koman, V. B.; Zeng, Y.; Kuehne, M.; Silmore, K. S.; Parviz, D.; Liu, P.; **Liu, A. T.**; Faucher, S.; Yuan, Z.; Warner, J.; Blankschtein, D.; Strano, M. S.† Discretized Hexagonal Boron Nitride Quantum Emitters and Their Chemical Interconversion. *Nanotechnology*, **2023**, *34 (11)*, 115702.

2022 **(28)** Yang, J. F.*; Berrueta, T. A.*; Brooks, A. M.; **Liu, A. T.**; Zhang, G.; Gonzalez-Medrano, D.; Yang, S.; Koman, V. B.; Chvykov, P.; LeMar, L. N.; Miskin, M. Z.; Murphey, T. D.; Strano, M. S.† Emergent Microrobotic Oscillators via Asymmetry-induced Order. *Nature Communications* **2022**, *13*, 5734.

2022 **(27)** Zeng, Y.; Gordiichuk, P.; Ichihara, T.; Zhang, G.; Sandoz-Rosado, E.; Wetzel, E. D.; Tresback, J.; Yang, J.; Kozawa, D.; Yang, Z.; Kuehne, M.; Quien, M.; Yuan, Z.; Gong, X.; He, G.; Lundberg, D. J.; Liu, P.; **Liu, A. T.**; Yang, J. F.; Kulik, H. J.; Strano, M. S.† Irreversible Synthesis of an Ultrastrong Two-dimensional Polymeric Material. *Nature* **2022**, *602*, 91–5.

2021 **(26)** Yang, J. F.; **Liu, A. T.**; Berruueta, A. T.; Zhang, G.; Brooks, A. M.; Koman, V. B.; Yang, S.; Gong, X.; Murphey, T. D.; Strano, M. S.† Memristor Circuits for Colloidal Robotics: Temporal Access to Memory, Sensing, and Actuation. *Advanced Intelligent Systems* **2021**, *4 (4)*, 2100205.

2021 **(25) Liu, A. T.***; Kunai, Y.*; Cottrill, A. L.; Kaplan, A.; Zhang, G.; Kim, H.; Mollah, R. S.; Eatmon, Y. L.; Strano, M. S.† Solvent-induced Electrochemistry at an Electrically Asymmetric Carbon Janus Particle. *Nature Communications* **2021**, *12*, 1–9.

2021 **(24) Liu, A. T.***; Yang, J. F.*.; LeMar, L. N.; Zhang, G.; Pervan, A.; Murphey, T. D.; Strano, M. S.† Autoperforation of Two-dimensional Materials to Generate Colloidal State Machines Capable of Locomotion. *Faraday Discussions* **2021**, *227*, 213–32.

2020 **(23)** Zhang, G.**;** Cottrill, A. L.; Koman, V. B.; **Liu, A. T.**; Mahajan, S. G.; Piephoff, D. E.; Strano, M. S.† Persistent, Single-polarity Energy Harvesting from Ambient Thermal Fluctuations Using a Thermal Resonance Device with Thermal Diodes. *Applied Energy* **2020**, *280*, 115881.

2019 **(22)** Salem, D. P.**;** Gong, X.; **Liu, A. T.**; Akombi, K.; Strano, M. S.† Immobilization and Function of nIR-Fluorescent Carbon Nanotube Sensors on Paper Substrates for Fluidic Manipulation. *Analytical Chemistry* **2019**, *92*, 916–23.

2019 **(21)** Cottril, A. L.**;** Zhang, G.; **Liu, A. T.**; Bakytbekov, A.; Silmore, K. S.; Koman, V. B.; Shamim, A.; Strano, M. S.† Persistent Energy Harvesting in the Harsh Desert Environment Using a Thermal Resonance Device: Design, Testing, and Analysis. *Applied Energy* **2019**, *235*, 1514–23.

2018 **(20) Liu, A. T.**; Ge, Z.; Cottrill, A. L.; Strano, M. S.† Direct Energy Generation via Molecular Interaction with Nano-structured Materials, a Mechanistic Perspective. *Advanced Energy Materials* **2018**, *8 (35)*, 1802212.

2018 **(19)** Liu, P.*; **Liu, A. T.***; Kozawa, D.; Dong, J.; Saccone, M.; Koman, V. B.; Wang, S.; Son, Y.; Wong, M. H.; Strano, M. S.† Autoperforation of 2D Materials for Generating Two Terminal Memresistive Janus Particles. *Nature Materials* **2018**, *17*, 1005–12.

2018 **(18)** Cottrill, A. L.; Wang, S.; **Liu, A. T.**; Strano, M. S.† Dual Phase Change Thermal Diodes for Enhanced Rectification Ratios: Theory and Experiment. *Advanced Energy Materials* **2018**, *8 (11)*, 1702692.

2018 **(17)** Koman, V. B.; Liu, P.; Kozawa, D.; **Liu, A. T.**; Cottrill, A. L.; Son, Y.; Lebron, J. A.; Strano, M. S. † Colloidal, Nanoelectronic State Machines Based on 2D Materials for Aerosolizable Electronics. *Nature Nanotech.* **2018**, *13*, 819–827.

2018 **(16)** Cottrill, A. L.; **Liu, A. T.**; Kunai, Y.; Koman, V. B.; Kaplan, A.; Mahajan, S. G.; Liu, P.; Toland, A. R.; Strano, M. S.† Ultra-High Thermal Effusivity Materials for Resonant, Ambient Thermal Energy Harvesting. *Nature Comm.* **2018**, *9*, 664.

2018 **(15)** Liu, P.; Cottrill, A. L.; Kozawa, D.; Koman, V. B.; Parviz, D.; **Liu, A. T.**; Yang, J.; Tran, T. Q.; Wong, M. H.; Wang, S.; Strano, M. S.† Emerging Trands in 2D Nanotechnology that Are Redefining Our Understanding of "Nanocomposites". *Nano Today* **2018**, *21*, 18–40.

2017 **(14)** Salem, D. P.; Gong, X.; **Liu, A. T.**; Koman, V. B.; Dong, J.; Strano, M. S.† Ionic Strength Mediated Phase Transitions of Surface Adsorbed DNA on Signed-walled Carbon Nanotubes. *J. Am. Chem. Soc.* **2017**, *139 (46)*, 16791–16802.

2017 **(13)** Bellisario, D. O.; **Liu, A. T.**; Kozawa, D.; Han, R.; Harris, J. K.; Zabala, R. B.; Wang, Q. H.; Agrawal, K. V.; Son, Y.; Strano, M. S.† Experimental Observation of Real Time Molecular Dynamics using Electromigrated Tunnel Junctions. *J. Phys. Chem. C* **2017**, *121 (40)*, 22550–22558.

2017 **(12)** Kunai, Y.*; **Liu, A. T.***; Cottrill, A. L.; Koman, V. B.; Strano, M. S.† Observation of the Marcus Inverted Region of Electron Transfer from Asymmetric Chemical Doping of Pristine (*n*, *m*) Single-walled Carbon Nanotubes. *J. Am. Chem. Soc.* **2017**, *139 (43)*, 15328–15336.

2017 **(11)** Son, Y.;* Kozawa, D.;* **Liu, A. T.**; Koman, V. B.; Wang, Q. H.; Strano, M. S.† A Study of Bilayer Phosphorene Stability under MoS_2 Passivation. *2D Materials* **2017**, *4 (2)*, 025091.

2017 **(10)** Kwak, S.; Wong, M. H.; Lew, T. T. S.; Bisker, G.; Lee, M. A.; Kaplan, A.; Dong, J.; **Liu, A. T.**; Koman, V. B.; Sinclair, R. M.; Hamann, C.; Strano, M. S.† Nanosensor Technology Applied to Living Plant Systems. *Annu. Rev. Anal. Chem.* **2017**, *10*, 113–140.

2016 **(09)** Schmidt, J.; Choi, J.; **Liu, A. T.**; Slusarczyk, M.; Fu, G. C.† A General, Modular Method for the Catalytic Asymmetric Synthesis of Alkylboronate Esters via Alkyl-Alkyl Cross-Coupling. *Science* **2016**, *354*, 1265–1269.

2016 **(08) Liu, A. T.***; Kunai, Y.*; Liu, P.; Kaplan, A.; Cottrill, A. L.; Smith-Dell, J. S.; Strano, M. S.† Electrical Energy Gene-ration via Reversible Chemical Doping on Carbon Nanotube Fibers. *Advanced Materials* **2016**, *28 (44)*, 9752–9757.

2016 **(07)** Mahajan, S. G.*; **Liu, A. T.***; Cottrill, A. L.; Kunai, Y.; Bender, D.; Castillo, J.; Gibbs, S. L.; Strano, M. S.† Sustainable Power Sources Based on High Efficiency Thermopower Wave Devices. *Energy and Environmental Science* **2016**, *9 (4)*, 1290–1298.

2016 **(06)** Davis, T. M.†; **Liu, A. T.**; Lew, C. M.; Xie, D.; Benin, A. I.; Elomari, S.; Zones, S. I.; Deem, M. W.† Computationally Guided Synthesis of SSZ-52: A Zeolite for Engine Exhaust Clean-up. *Chemistry of Materials* **2016**, *28 (3)*, 708–711.

2014 **(05) Liu, A. T.**; Zaveri, R. A.; Seinfeld, J. H.† Analytical Solution for Transient Partitioning and Reaction of a Condensing Vapor Species in a Droplet. *Atmospheric Environment* **2014**, *89*, 651–654.

2014 **(04)** Lai, H. W. H.; **Liu, A. T.**; Emenike, B. U.; Carroll W. R.; Roberts, J. D.† Conformational Preferences of N,N-Dimethylsuccinamate as a Function of Alkali and Alkaline Earth Metal Salts: Experimental Studies in DMSO and Water as Determined by ^{1}H-NMR Spectroscopy. *J. Phys. Chem. A.* **2014**, *118 (11)*, 1965–1970.

2013 **(03) Liu, A. T.;** Nag, M.; Carroll, W. R.; Roberts, J. D.† Conformational Analysis of N,N,N-Trimethyl-(3,3-dimethylbutyl)ammonium Iodide by NMR Spectroscopy: a Sterically Hindered Trans-standard. *Magn. Reson. Chem.* **2013**, *51 (11)*, 701–704.

2013 **(02) Liu, A. T.**; Emenike, B. U.; Carroll, W. R.; Roberts, J. D.† Conformational Equilibria of N,N-Dimethylsuccinamic Acid and Its Lithium Salt as a Function of Solvent. *Org. Lett.* **2013**, *15 (4)*, 760–763.

2013 **(01)** Emenike, B. U.; **Liu, A. T.**; Naveo, E. P.; Roberts, J. D.† Substituent Effects on Energetics of Peptide-Carboxylate Hydrogen Bonds as Studied by ^{1}H-NMR Spectroscopy: Implications for Enzyme Catalysis. *J. Org. Chem.* **2013**, *78 (23)*, 11765–11771.

BOOK CHAPTERS

2019 **(02) Liu, A. T.**; Ge, Z.; Strano, M. S. Energy Harvesting Techniques Mediated by Molecular Interactions with Nanostructured Carbon Materials. *Robotic Systems and Autonomous Platforms*, edited by Walsh, S. M.; Strano, M. S. (Elsevier ISBN 978-0-08-102260-3, *Woodhead Publishing in Materials* **2019**, 389–424).

2019 **(01)** Yang, J. F.; Liu, P.; Koman, V. B.; **Liu, A. T.**; Strano, M. S. Synthetic Cells: Colloidal-Sized State Machines. *Robotic Systems and Autonomous Platforms*, edited by Walsh, S. M.; Strano, M. S. (Elsevier ISBN 978-0-08-102260-3, *Woodhead Publishing in Materials* **2019**, 389–424).

PATENTS

2022 **(03)** Strano, M. S.; Cottrill, A. L.; Mahajan, S. G.; **Liu, A. T.** Koman, V. B. Materials, devices, and methods for resonant ambient thermal energy harvesting. US11296271B2. (04/2022)

2021 **(02) Liu, A. T.**; Liu, P.; Koman, V. B.; Kozawa, D.; Strano, M. S. Nearly 2D Electronic Microparticles. US11121176B2. (09/2021)

2017 **(01) Liu, A. T.**; Davis, T. M.; Lew, C. M.; Xie, D.; Elomari, S. A.; Deem, M. Method for Preparing Zeolite SSZ-52. US9796596B2. (10/2017)

INVITED SEMINARS AND CONFERENCE PROCEEDINGS

Invited Talks

2025 Elucidating the Geometric and Charge Transfer Effects on the Spatial Uniformity of the Nanopore Electroporation Cell Transfection Method, **2025 Electrochemical Society Meeting** (May 28), *Montreal, Canada*

2025 Solvent Induced Electrical Energy Conversion Mediated by Molecular Interactions with Low Dimensional Carbon Materials, **2025 Electrochemical Society Meeting** (May 27), *Montreal, Canada*

2025 Colloidal Electronic Matter, **Blue-Green Seminar, Dept. of Chemical Engineering and Materials Science, Michigan State University** (Apr. 24), *Lansing, MI*

2025 Designing Tunable Self-Assembly Process of Microparticles at Fluidic Interfaces, **2025 Materials Research Society Spring Meeting** (Apr. 09), *Seattle, WA*

2024 Integrating Intermetallic CoPc-PtZn Electrocatalysts with Colloidal Graphene Quantum Dots Towards Highly Selective CO_2 Upgrading into Methanol (with Joshua Jack), **MMRI Annual Summit** (May. 29), *University of Michigan, Ann Arbor, MI*

2024 Colloidal Electronic Matter, **Dept. of Materials Science & Engineering Seminar** (Mar. 08), *NC State, Raleigh, NC*

2024 Collective Intelligence, Discussion Leader, **Gordon Research Conference**, Robotics (Jan. 16, 2024), *Ventura, CA*

2023 Colloidal Electronic Matter, **Department of Chemical Engineering Seminar** (Nov. 16), *University of Toledo, OH*

2023 Colloidal Electronic Matter, **2023 AIChE National Meeting** (Nov. 05, 2023), *Orlando, FL*

2023 Colloidal Electronic Matter, **ACS Fall 2023 National Meeting** (Aug. 16, 2023), *San Francisco, CA*

2023 Dynamic Self-Assembly in Anisotropic Colloidal Systems for Emergent and Synchronized Oscillation, **Complex Mechanical Metamaterials ICAM Workshop** (Jul. 14, 2023), *Ann Arbor, MI*

2023 Colloidal Electronic Matter, **ACS Colloidal and Surface Science Symposium** (Jun. 07, 2023), *Raleigh, NC*

2023 Colloidal Electronics, **Department of Chemistry Seminar** (Mar. 21, 2023), *Oakland University, MI*

2023 Colloidal Electronics, **Gordon Research Conference**, Complex Active and Adaptive Material Systems (Jan. 31, 2023), *Ventura, CA*

2022 Colloidal Electronics, **Biodesign Institute Seminar** (Nov. 16, 2022), *Arizona State University, Phoenix, AZ*

2020 Colloidal Electronics, **Electrical Engineering Dept. Seminar** (Mar. 09), *Caltech, Pasadena, CA*

2020 Colloidal Electronics, **MSE Dept. Seminar** (Mar. 06), *University of California, Berkeley, CA*

2020 Colloidal Electronics, **CBE Department Seminar** (Feb. 18), *National University of Singapore, Singapore*

2020 Colloidal Electronics, **MechE Dept. Seminar** (Feb. 12), *University of Illinois, Urbana-Champaign, IL*

2020 Colloidal Electronics, **CBE Dept. Seminar** (Feb. 10), *Georgia Institute of Technology, Atlanta, GA*

2020 Colloidal Electronics, **CBE Dept. Seminar** (Feb. 05), *University of California, Los Angeles, CA*

2020 Colloidal Electronics, **ChemE Dept. Seminar** (Feb. 03), *Caltech, Pasadena, CA*

2020 Colloidal Electronics, **ChemE Dept. Seminar** (Jan. 30), *University of Michigan, Ann Arbor, MI*

2020 Colloidal Electronics, **Mechanical Engineering and Materials Science Dept. Seminar** (Jan. 23), *Washington University at Saint Louis, Saint Louis, MO*

2018 2D-Macromolecular Heterostructures Enabled Colloidal State Machines, **Macromolecular Science & Engineering Symposium** (Oct. 24, 2018), *University of Michigan*

2017 Conformational Analysis Guided Molecular Transformation and Energy Generation Processes, **Department Invited Seminar Series** (Jul. 17, 2017), *Zhejiang University, Hangzhou, China*

Contributed Talks

2024 Sungwan Park, Albert Liu. Exploring the Size Limit of Lateral Capillarity in Interfacial Assembly Processes, **98th ACS Colloids and Surface Science Symposium** (Jun. 24), *University of Washington, Seattle, WA*

2024 Jihpeng Sun, Albert Liu. Colloidal Electronic Matter, **Materials Research Society Spring Meeting** (Apr. 26), *Seattle, WA*

2019 2D-Macromolecular Layered Composites Enabled Electronic Microparticles, **AIChE Annual National Meeting** (Nov. 12, 2019), *Orlando, FL*

2019 Emergent Computation Enabled by Colloidal State Machines, **Army Research Office MURI Kickoff Meeting** (Aug. 22, 2019), *Georgia Tech, Atlanta, GA*

2019 Colloidal State Machines, **ACS Colloidal and Surface Science Symposium** (Jun. 17, 2019), *Atlanta, GA*

2019 Microscale Energy Generation via Asymmetric Chemical Doping, **Applied Energy Symposium and Summit** (May 23, 2019), *MIT*

2018 Microscale Energy Storage & Harvesting – Thermopower Wave and Asymmetric Chemical Doping, **Materials Research Society Fall Meeting** (Nov. 30, 2018), *Boston, MA*

2018 Colloidal State Machines, **AIChE Annual National Meeting** (Oct. 25, 2018), *Pittsburgh, PA*

2018 Foldable and Adaptive Two-dimensional Electronics, **Air Force Office of Scientific Research MURI Annual Review** (Sep. 21, 2018), *Cornell University*

2018 Single-walled Carbon Nanotube Mediated *in situ* Electrochemistry, **256th ACS National Meeting** (Aug. 23, 2018), *Boston, MA*

2018 From Asymmetric Doping to Colloidal Electronics – Concepts in Biosensing and Energy Generation using Low Dimensional Materials, **256th ACS National Meeting** (Aug. 21, 2018), *Boston, MA*

2018 Synthetic Cells – Colloidal Electronic Microparticles, **Boston Academic Researchers Symposium** (July. 19, 2018), *Northeastern University*

2018 From Thermopower Waves to Asymmetric Chemical Doping – New Concepts in Energy Storage and Generation Using Molecular Interactions with Single-Walled Carbon Nanotubes, **233rd ECS Meeting** (May. 14, 2018), *Seattle, WA*

2018 2D Materials Encapsulated Colloidal Electronic Cells, **MIT Polymer Day** (Apr. 11, 2018), *MIT*

2018 Autoperforation of 2D Materials for Generating Memristive Janus Particles, **255th ACS National Meeting** (Mar. 22, 2018), *New Orleans, LA*

2018 Electricity from Asymmetric Chemical Doping, **MIT Chemical Engineering Department Student Seminar** (Mar. 12, 2018), *MIT*

2018 Synthetic Electronic Cells: Distributed, Modular, Particulate Electronic Devices as Platform for Data Collection and Storage, **MIT Intelligent Quest** (Mar. 01, 2018), *MIT*

2018 Autoperforation of 2D Materials for Self-Powered, Memresistive Microparticles, **Microsystems Annual Research Conference** (Jan. 30, 2018), *Bretton Woods, NH*

2017 Towards a Modular Memristive Microparticle – Nanoscale Device Fabrication and Electricity Generation, **Materials Research Society Fall Meeting** (Nov. 28, 2017), *Boston, MA*

2017 Nano-Materials Enabled 2D Colloidal Electronics and Electrical Energy Generation Processes, **AIChE Annual National Meeting** (Oct. 31, 2017), *Minneapolis, MN*

2017 New Materials by Folding and Autoperforation of 2D Surfaces, **Air Force Office of Scientific Research MURI Annual Review** (Oct. 26, 2017), *MIT*

2017 Design and Fabrication of Colloidal State Machines for Petrochemical Applications, **E&P Technical Exchange at King Fahd University of Petroleum and Minerals** (Oct. 16, 2017), *Dhahran, Saudi Arabia*

2017 Chirality Associated Marcus Inverted Region Observed in Single-Walled Carbon Nanotubes via Asymmetric-doping Induced Electrical Potential (Aug. 22, 2017), **254th ACS National Meeting**, *Washington, DC*

2017 Autoperforation of 2D Materials for Generating Two Terminal Memresistive Janus Particles, **Sense.nano Symposium** (May 25, 2017), *MIT*

2017 Electrical Energy Generation via Asymmetric H_2O Doping (Mar. 22, 2017), **MIT Water Night**, *MIT*

2016 Sustainable Power Sources Based on High Efficiency Thermopower Wave Devices, **AIChE Annual National Meeting** (Nov. 15, 2016), *San Francisco, CA*

2016 Electrical Energy Generation via Reversible Chemical Doping on Carbon Nanotube Fibers, **AIChE Annual National Meeting** (Nov. 14, 2016), *San Francisco, CA*

2016 Ambient Energy Harvesting: Thermal Resonators, **MIT Energy Night** (Oct. 13, 2016), *MIT*

2016 Graphene Autoperforation: Mold-based Strain Controlled Crack Propagation, **Air Force Office of Scientific Research MURI Annual Review** (Sep. 22, 2016), *Cornell University*

2016 Novel Energy Sources Based on Excess Thermopower and Carbon Nanotube Fibers, **252nd ACS National Meeting** (Aug. 23, 2016), *Philadelphia, PA*

2016 Fascination towards Nanoscale Energy Generation using Thermopower Waves, **Material Processing Center Project Pitch**, Center for Material Science and Engineering (Jun. 10, 2016), *MIT*

2016 Technologies for Performance Enhancement and Persistence of Low-Temperature Undersea Dives, **Office of Naval Research Neptune Program Annual Review** (May 23, 2016), *Arizona State University*

2014 Development towards Facile Synthesis of Zeolite SSZ-52, **Chevron R&D Department Seminar**, *Richmond, CA*

2014 Nickel-Catalyzed Asymmetric Alkylation of α-Halo Boronic Esters, **Senior Thesis Defense**, *Caltech*

2012 Theoretical Study of the NO_2 Decomposition over a Modified Cu-FAU Zeolite, **244th ACS National Meeting**, *Philadelphia, PA*

2011 Determination of the Dihedral Angles in Predominantly *trans*-1,2-disubstituted Ethane Systems Using NMR Spectroscopy, **243rd ACS National Meeting**, *San Diego, CA*

2011 Substituent Effects on Energetics of Peptide-Carboxylate Hydrogen Bonds, **Summer Undergraduate Research Fellow Seminar**, *Caltech*

2011 Decomposition of NO_2 and N_2O gases on Cu-Al and Fe-Al Modified Zeolite Catalysts, **Undergraduate Research Symposium**, *University of Chicago*

2011 Oxime Cross-Metathesis towards Nitrones, **Department of Chemistry Student Research Seminar**, *Grinnell College*

2010 Computational Study of the Decomposition of NO_2 and N_2O gases on Fe-Al Modified Zeolite Catalysts, **Undergraduate Research Symposium**, *Washington University at Saint Louis*

2009 Computational Study of the Decomposition of NO_2 and N_2O gases on Cu-Al Modified Zeolite Catalysts, **Mentored Advanced Project Seminar**, *Grinnell College*

CONFERENCE PROCEEDINGS BY TRAINEES

2025 Ma Rong, Jihpeng Sun, Sungwan Park, AT Liu, "Programmable cargo release from jet-printed microgel particles via an in situ ionic exchange method", **Gordon Research Conference - Complex Active and Adaptive Material Systems** (01/2025), *Ventura, CA* (Poster)

2025 Sungwan Park, Justin J. Choi, AT Liu, "Designing Tunable Self-Assembly Process of Microparticles at the Fluidic Interface", **Gordon Research Conference - Complex Active and Adaptive Material Systems** (01/2025), *Ventura, CA* (Poster)

2024 Jebril Thaxton, Matthew Manion, Guanren Tao, AT Liu, "Effect of Tuning Aqueous Interfacial Reactions on Asymmetrical Electric Fields in Cellular Delivery/Removal", **2024 African Materials Research Society Meeting** (12/2024), *Kigali, Rwanda* (Poster)

2024 Rong Ma, Sungwan Park, AT Liu, "Programmable cargo release from jet-printed microgel particles via an in situ ionic exchange method" **2024 AIChE Annual Meeting** (10/2024), Particle Technology Forum, Nanostructured Materials for Bioimaging and Theranostics, *San Diego, CA* (Oral)

2024 Sungwan Park, Justin J. Choi, AT Liu, "Exploring the Size Limit of Lateral Capillarity in Interfacial Assembly Processes" **2024 AIChE Annual Meeting** (10/2024), Engineering Sciences and Fundamentals, Fundamentals of Interfacial Phenomena II, *San Diego, CA* (Oral)

2024 Sungwan Park, Justin J. Choi, AT Liu, "Designing Tunable Self-Assembly Process of Microparticles at the Fluidic Interface" **2024 AIChE Annual Meeting** (10/2024), Materials Engineering and Sciences Division, Advanced Hybrid Material, *San Diego, CA* (Oral)

2024 Emily McCorkle, Matthew Manion, Guanren Tao, Cheyenne Meeks, Sasha Cai Lesher-Pérez, AT Liu, "Elucidating the Electric Field Distribution in a Two Planar Electrode Assembly with a Nanoporous Polycarbonate Membrane and Cell Monolayer Hybrid" **2024 AIChE Annual Meeting** (10/2024), Materials Engineering and Sciences Division, Advanced Hybrid Material, *San Diego, CA* (Oral)

2024 Emily McCorkle, Matthew Manion, Guanren Tao, Cheyenne Meeks, Sasha Cai Lesher-Pérez, AT Liu, "Elucidating the Geometric Effects on the Spatial Uniformity of the Nanopore Electroporation Cell Transfection Method" **2024 AIChE Annual Meeting** (10/2024), *San Diego, CA* (Poster)

2024 Sungwan Park, Justin J. Choi, Nhayeon Lee, AT Liu, "Advanced Manufacturing: Fabricating Functional Microparticles towards Synthetic Cells", **Michigan Chemical Engineering Graduate Symposium** (09/2024), *Ann Arbor, MI* (Poster)

2024 Jihpeng Sun, Adam Roberts, AT Liu, "Synthesis and Functionalization of Graphene Quantum Dots for Wettability Control of Electrode/electrolyte Interfaces", **Michigan Chemical Engineering Graduate Symposium** (09/2024), *Ann Arbor, MI* (Poster)

2024 Jongbin Won, Ryan Marks, AT Liu, "Elucidation of the hydrovoltaic effect through the fabrication of hydrophilic micro-channel devices", **Michigan Chemical Engineering Graduate Symposium** (09/2024), *Ann Arbor, MI* (Poster)

2024 Sungwan Park, Justin J. Choi, AT Liu, "Exploring the Size Limit of Lateral Capillarity in Interfacial Assembly Processes", **Michigan Chemical Engineering Graduate Symposium** (09/2024), *Ann Arbor, MI* (Oral)

2024 Matthew Manion, Jebril Thaxton, Guanren Tao, AT Liu, "Effect of Tuning Aqueous Interfacial Reactions on Asymmetrical Electric Fields in Cellular Delivery/Removal", **Michigan Chemical Engineering Graduate Symposium** (09/2024), *Ann Arbor, MI* (Poster)

2024 Emily McCorkle, Matthew Manion, Guanren Tao, Cheyenne Meeks, Sasha Cai Lesher-Pérez, AT Liu, "Elucidating the Geometric Effects on the Spatial Uniformity of the Nanopore Electroporation Cell Transfection Method", **Michigan Chemical Engineering Graduate Symposium** (09/2024), *Ann Arbor, MI* (Poster)

2024 Rong Ma, Sungwan Park, AT Liu, "Programmable cargo release from jet-printed microgel particles via an in situ ionic exchange method", **2024 ACS National Fall Meeting** (08/2024), COLL: Active and Responsive Matter, *Denver, CO* (Oral)

2024 Sungwan Park, Justin J. Choi, AT Liu, "Exploring the Size Limit of Lateral Capillarity in Interfacial Assembly Processes", **2024 ACS National Fall Meeting** (08/2024), COLL: Basic Research in Colloids, Surfactants and Interfaces, *Denver, CO* (Oral)

2024 Rong Ma, Sungwan Park, AT Liu, "Programmable cargo release from jet-printed microgel particles via an in situ ionic exchange method", **Michigan Materials Research Institute Annual Summit** (05/2024), *Ann Arbor, MI* (Poster)

2024 Sungwan Park, Dániel Barabási, Cory Glover, Albert-László Barabási, AT Liu, "Exploring the Lateral Capillarity-Induced Fluidic Interfacial Assembly Processes of Anisotropic Meso- and Micro Particles", **Michigan Materials Research Institute Annual Summit** (05/2024), *Ann Arbor, MI* (Poster)

2024 Jihpeng Sun, Rong Ma, AT Liu, “Decoupling the electrical and wetting properties of electrochemically active surfaces via engineered Graphene Quantum Dots”, **Michigan Materials Research Institute Annual Summit** (05/2024), *Ann Arbor, MI* (Poster)

2024 Jongbin Won, Jihpeng Sun, AT Liu, “Elucidation of the hydrovoltaic effect using nanostructured carbon materials via surface functionalization”, **Michigan Materials Research Institute Annual Summit** (05/2024), *Ann Arbor, MI* (Poster)

2024 Rong Ma, Sungwan Park, AT Liu, “Programmable cargo release from jet-printed microgel particles via an in situ ionic exchange method”, **NSF COMPASS Site Visit** (05/2024), *Ann Arbor, MI* (Poster)

2024 Sungwan Park, Mische Hubbard, Gabby Jones, Justin Choi, Nicole Baalbaki, Paul Bogdan, Sharon C. Glotzer, Nicholas A. Kotov, AT Liu, “Pickering Emulsion of Complex Chiral Bowtie Nano-Assemblies: Self-Assembly of Emulsifiers at the Curved Interface”, **NSF COMPASS Site Visit** (05/2024), *Ann Arbor, MI* (Poster)

2024 Sungwan Park, Dániel Barabási, Cory Glover, Albert-László Barabási, AT Liu, “Exploring the Lateral Capillarity-Induced Fluidic Interfacial Assembly Processes of Anisotropic Meso- and Micro Particles”, **NSF COMPASS Site Visit** (05/2024), *Ann Arbor, MI* (Poster)

2024 Jihpeng Sun, Rong Ma, AT Liu, “Decoupling The Electrical and Wetting Properties of an Electrochemically Active Surface via Engineered Graphene Quantum Dots”, **NSF COMPASS Site Visit** (05/2024), *Ann Arbor, MI* (Poster)

2024 Jongbin Won, Jihpeng Sun, AT Liu, “Elucidation of the hydrovoltaic effect using nanostructured carbon materials via surface functionalization”, **NSF COMPASS Site Visit** (05/2024), *Ann Arbor, MI* (Poster)

2024 Sungwan Park, Dániel Barabási, Cory Glover, Albert-László Barabási, AT Liu, “Exploring the Lateral Capillarity-Induced Fluidic Interfacial Assembly Processes of Anisotropic Meso- and Micro Particles”, **2024 LNF Community Day** (05/2024), *Ann Arbor, MI* (Poster)

2023 Sungwan Park, Mische Hubbard, Rong Ma, Matthew L. Manion, Nicholas A. Kotov, AT Liu, “2D Assembly of Chiral Bowtie Nano-Assemblies at the Interface”, **NSF-COMPASS Kick-Off Meeting** (12/2023), *Ann Arbor, MI* (Oral)

2023 Sungwan Park, AT Liu, “Two-Dimensional Self-Assembly of Microdisk Particles: Effect of Particle Size, Thickness, and Surface Chemistry”, **2023 AIChE Annual Meeting** (11/2023), Anisotropic Particles: Synthesis, Characterization, Modeling, Assembly, and Applications, *Orlando, FL* (Oral)

2023 Matthew Manion, Joshua Doctor, AT Liu, “Temporally and Spatially Resolved Concentration Profiling via Distributed Colloidal Particles with Onboard 1D Memristive Arrays”, **2023 AIChE Annual Meeting** (11/2023), Sensors and Monitoring for Health, *Orlando, FL* (Oral)

2023 Sungwan Park, AT Liu, “Exploring Programmed Dynamic Self-Assembly in Colloidal Systems at the Air-Water Interface”, **Michigan Chemical Engineering Graduate Symposium** (09/2023), *Ann Arbor, MI* (Poster)

2023 Matthew Manion, Landon Gates, AT Liu, “Characterization of Thin Film Cathodes for Microfluidic Electroporation”, **Michigan Chemical Engineering Graduate Symposium** (09/2023), *Ann Arbor, MI* (Poster)

2023 Emily McCorkle, AT Liu, Sasha Cai Lesher-Pérez, “Dynamic Nanopore Microfluidic Transfection via Electroporation (DyNaMiTE)”, **Michigan Chemical Engineering Graduate Symposium** (09/2023), *Ann Arbor, MI* (Poster)

CONTRIBUTED GRANT PROPOSALS

University of Michigan

2025 **Project Title:** Breaking Barriers in Chemical Engineering: Accessible Educational Pipelines for Virtual Reality (VR) Integrated Curricula (PI)
Source of Support: Enhancing Engineering Education (E3) Grant, Center for Research on Learning & Teaching (CRLT)–Engin, University of Michigan (Jul. 01, 2025)
Award Amount: $10,000

2024 **Project Title:** Immersive Learning in Chemical Engineering: Maximizing Student Accessibility and the Pedagogical Impact of a Virtual Reality (VR)-Enhanced Curriculum (PI)
Source of Support: Faculty Development Fund, Center for Research on Learning & Teaching (CRLT), University of Michigan (Dec. 20, 2024)
Award Amount: $10,000

2024 **Project Title:** Integrating intermetallic CoPc-PtZn electrocatalysts with colloidal graphene quantum dots towards highly selective CO2 upgrading into methanol (co-PI)
Source of Support: Michigan Materials Research Institute, University of Michigan (Feb. 26, 2024)
Award Amount: $60,000

2023 **Project Title:** Field-assisted Conductive Microgel Assembly at the Electrode-Electrolyte Interface for Reconfigurable Electrocatalysis (PI)
Source of Support: American Chemical Society Petroleum Research Fund (Nov. 12, 2023)
Award Amount: $110,000

2023 **Project Title:** Center for Complex Particle Systems (COMPASS) (co-investigator)
Source of Support: National Science Foundation Science and Technology Center (Sep. 16, 2023)
Award Amount: $30,000,000

2023 **Project Title:** Advancing Battery-less Sensing for Sustainable Living and Civil Infrastructures (PI)

Source of Support: Michigan Bold Challenge BOOST Program, University of Michigan (May. 15, 2023)
Award Amount: $75,000

2023 **Project Title:** Dynamic Nanopore Microfluidic Transfection via Electroporation (DyNaMiTE) (PI)
Source of Support: Michigan Engineering START Grant (May. 11, 2023)
Award Amount: $30,000

Under the supervision of Steven Chu (PI)

2021 **Project Title:** Extending the Temporal and Spatial Capabilities of Single-molecule Methods
Source of Support: U.S. National Institute of Health (R01)
Total Award Amount: $3,021,770

Under the supervision of Michael S. Strano (PI)

2019 **Project Title:** MURI – Formal Foundations of Algorithmic Matter and Emergent Computation
Source of Support: U.S. Army Research Office (ARO)
Total Award Amount: $6,250,000

2018 **Project Title:** ISN4 – 1.2 Shock Mitigating and Reinforcing Molecular Nanocomposites
Award Number: W911NF-18-2-0048
Source of Support: ARO-ISN, University Affiliated Research Centers (UARC)
Total Award Amount: $90,000

2017 **Project Title:** Synthetic Routes to Graphamid and Grapheylene by High Pressure Control of In-Plane Polymerization and Activation
Source of Support: U.S. Army Research Office
Total Award Amount: $500,000

2015 **Project Title:** Thermal Management Technologies for Low-Temperature Undersea Drive Persistence
Award Number: N00014-16-1-2144
Source of Support: U.S. Navy Office of Naval Research (ONR)
Total Award Amount: $497,246

2015 **Project Title:** MURI – Foldable and Adaptive Two-dimensional Electronics (FATE)
Award Number: FA9550-15-1-0514
Source of Support: U.S. Air Force Office of Scientific Research (AFOSR)
Total Award Amount: $534,746

TEACHING

University of Michigan

2023- **ChE 696 Particles and Particle Systems**
2022- **ChE 342 Mass and Heat Transfer**

Workshop or Short Courses

2024 Workshop (Oct. 26, 2024), 'Pathway to Nanoscale Science and Engineering', American Institute of Chemical Engineers (AIChE) Annual Student Conference, *San Diego, CA*
2024 American Institute of Chemical Engineers (AIChE) Student Chapter Luncheon Workshop (Feb. 22, 2024)
2023 ChE Homecoming Lightening Talk – Matter by Design (Sep. 22, 2023)
2023 American Institute of Chemical Engineers (AIChE) Student Chapter Luncheon Workshop (Feb. 16, 2023)
2023 Omega Chi Epsilon Chemical Engineering Society (OXE) Workshop (Feb. 02, 2023)
2022 Department of Materials Science and Engineering Seminar (Sep. 02, 2022)
2019 Workshop (with Felice Frankel, May 13, 2019), 'Is Your Graphics the Best It Can Be?', *MIT*
2019 Workshop (Apr. 10, 2019), 'Teaching & Mentoring Skills for English-as-Second-Language Speakers', *MIT*

Prior to University of Michigan

2019 **Teaching Development Fellowship**, *MIT*
2018 **Kaufman Teaching Certificate Program**, *MIT Teaching and Learning Laboratory*
2017-18 **Lecturer**, *SPARK, SPLASH, HSSP, MIT Educational Studies Program*
MIT run program to teach middle and high school students (*teaching profile*)
• (2018 Summer HSSP) Molecular Machines and Electronics – Industrial Revolution 5.0?
• (2018 Spring SPARK, HSSP) How Do You Generate Electricity from Water?
• (2017 Spring SPLASH) From Molecular Conformation to Nanotechnology, Energy and Medicine
• (2017 Spring SPARK) Nanotechnology Enabled Artificial Cells
2016-18 **Project Consultant**, *Chemical Engineering Projects Lab, MIT*
2010–19 **Teaching Assistant**
• (2019) Chemical Reactor Engineering (Klavs F. Jensen, Michael S. Strano, *MIT*)
• (2016) Analysis of Transport Phenomena (William M. Deen, Martin Z. Bazant, *MIT*)
• (2014) Chemical Reaction Engineering (Frances H. Arnold, *Caltech*)

- (2014) Separation Processes (John H. Seinfeld, *Caltech*)
- (2012) Organic Chemistry I & II (Stephen R. Sieck, T. Andrew Mobley, *Grinnell*)
- (2011) Classical Mechanics (Sujeev Wickramasekara, *Grinnell*)
- (2010) Organic Chemistry Laboratory (James G. Lindberg, *Grinnell*)

STUDENTS SUPERVISED

University of Michigan

Postdoctoral Scholars

	Name	***PhD***	***Contact***	***Next Affiliation***
2023-25	Rong Ma	*Texas A&M*	*rongm@umich.edu*	*USTC, China*

Graduate Students

	Name	***Department***	***Contact***	***Next Affiliation***
2024-	Zoe Cruse	*ChemE*	*zoecruse@umich.edu*	
2024-	Nyvia Lyles	*ChemE*	*nlyles@umich.edu*	
2023-	Jongbin Won	*ChemE*	*finrod@umich.edu*	
2023-	Jihpeng Sun	*ChemE*	*jpsun@umich.edu*	
2022-	Matthew Manion	*ChemE*	*mlman@umich.edu*	
2022-	Sungwan Park	*ChemE*	*sungwan@umich.edu*	
2022-	Emily McCorkle	*ChemE*	*mccorkle@umich.edu*	

Undergraduate Students

	Name	***Department***	***Contact***	***Next Affiliation***
2024-	Julia Baldwin	*ChemE*	*juliabal@umich.edu*	
2024-	Silas Lorenz	*ChemE*	*silasl@umich.edu*	
2024-	Adam Roberts	*ChemE*	*adamrobe@umich.edu*	
2024	Sarvikaa Ram	*ChemE*	*srakeshr@umich.edu*	
2024-	Ryan Mark	*ChemE*	*ryanmark@umich.edu*	
2023	Mohammed Harp	*ChemE*	*mohamh@umich.edu*	
2023-	Justin Choi	*ChemE*	*chjustin@umich.edu*	
2023-	Jebril Thaxton	*ChemE*	*gthaxton@umich.edu*	
2023	Huron Tu	*Physics*	*hurontu@umich.edu*	
2023-	Aaron Tao	*EE*	*guanrent@umich.edu*	
2023	Landon Gates	*EE (USI)*	*gatesl@umich.edu*	
2023-24	Youwen Duan	*EE*	*youwend@umich.edu*	
2023-24	Nadine El Ghaffir	*ChemE*	*nghaffir@umich.edu*	
2023-24	Nhayeon Lee	*ChemE*	*nhayeonl@umich.edu*	
2022-23	Hemil Kiri	*ChemE*	*kirihemi@umich.edu*	
2022-23	Anika Gupta	*ChemE*	*anigup@umich.edu*	
2022-23	Joshua Doctor	*EE*	*joshdoc@umich.edu*	
2022-23	Andrew Householder	*Physics*	*andhouse@umich.edu*	
2022-23	Alexander Bowler	*Robotics*	*albowler@umich.edu*	
2022-23	Andrew Schaefer	*MechE*	*drewscha@umich.edu*	
2022-23	Kathryn Darlak	*BME*	*gkdarlak@umich.edu*	

High School Students

	Name	***School***	***Contact***
2023-	Fiona Nikolla	*Utica Academy*	nikollafiona06@gmail.com

External Students

	Name	***University***	***Contact***	***Next Affiliation***
2024	Dedeepya Alla	*BITS, Pilani*	dedeepya@umich.edu	
2023	Ayush Sharma	*IIT, Delhi*	ayushsharma2019iit@gmail.com	
2022	Afnan Pathan	*IIT, Hyderabad*	ch19btech11015@iith.ac.in	*ChE, Delaware*

Prior to University of Michigan

	Name	***Affiliation***	***Duration***	***Projects*** (*contributed publications*)
2019	Lexy N. LeMar	*Caltech*	10 weeks	Emergent collective locomotion of active colloids (**24**)
2019	Ian Timothy	*Newbury, MA*	8 weeks	Autoperforation – theory and experiments
2018	Paul A. Baynard	*Westampton, NJ*	8 weeks	Autoperforation of synthetic cells
2017	Yannick L. Eatmon	*MIT*	9 months	Electricity generation via SWNT/H_2O doping (**25**)
2016-18	Rafid S. Mollah	*MIT*	1.5 years	Electrochemistry using SWNT/CH_3CN electricity (**25**)

2016-17	Linh Nguyen	*MIT*	1 year	Chemical doping of 2D materials
2016	Max A. Saccone	*Dartmouth*	3 months	MD simulation of graphene autoperforation (**19**)
2015-16	Jamila S. Smith-Dell	*MIT*	1 year	High efficiency Thermopower Wave Devices (**08**)
2015	Stephen L. Gibbs	*U. Florida*	10 weeks	Magnetic flux compression of Thermopower waves (**07**)

STUDENT AWARDS

2025 Syahidah Mohd Khairi, NSF COMPASS VR Development Fellowship, *National Science Foundation*
2024 Outstanding AIChE Student Chapter Award, *American Institute of Chemical Engineers*
2024 Zoe Cruse, NSF Graduate Student Research Fellowship, *National Science Foundation*
2024 Nyvia Lyles, Rackham Merit Fellowship, *University of Michigan*
2024 Rong Ma, NSF COMPASS Junior Scientists Project Award, *National Science Foundation*
2024 Sungwan Park, NSF COMPASS Junior Scientists Project Award, *National Science Foundation*
2024 Jihpeng Sun, NSF COMPASS Junior Scientists Project Award, *National Science Foundation*
2024 Emily McCorkle, Area 15B Graduate Student Poster Award (1st Place), *American Institute of Chemical Engineers*
2024 Matthew Manion, Chemical Engineering Graduate Symposium Poster Award (1st Place), *University of Michigan*
2024 Riley Garliauskas, NSF COMPASS VR Development Fellowship, *National Science Foundation*
2024 Sungwan Park, Rackham Travel Grant, *University of Michigan*
2024 Emily McCorkle, Rackham Travel Grant, *University of Michigan*
2024 Jihpeng Sun, Rackham Pre-candidate Fellowship, *University of Michigan*
2024 Jongbin Won, Rackham Pre-candidate Fellowship, *University of Michigan*
2024 Jebril Thaxton, Blue Ribbon Award, UROP Symposium, *University of Michigan*
2024 Aaron Tao, Blue Ribbon Award, UROP Symposium, *University of Michigan*
2024 Mohammed Harp, Blue Ribbon Award, UROP Symposium, *University of Michigan*
2024 Jebril Thaxton, NSF COMPASS Veteran Innovation Fellowship, *National Science Foundation*
2023 Andrew Schaefer, Blue Ribbon Award, UROP Symposium, *University of Michigan*
2023 Alexander Bowler, Blue Ribbon Award, UROP Symposium, *University of Michigan*
2023 Sungwan Park, Rackham Travel Grant, *University of Michigan*
2023 Matthew Manion, Rackham Travel Grant, *University of Michigan*
2023 Sungwan Park, Rackham Pre-candidate Fellowship, *University of Michigan*
2023 Emily McCorkle, Rackham Pre-candidate Fellowship, *University of Michigan*
2023 Matthew Manion, Rackham Pre-candidate Fellowship, *University of Michigan*
2023 Emily McCorkle, NSF Graduate Student Research Fellowship, *National Science Foundation*
2022 Landon Gates, Semiconductor Technology REU Award, *Intel Corporation*

SERVICE AND OUTREACH

Department, College, or University Committees

2024– Michigan Bioastronautics and Life Support Systems Project Team Advisor, University of Michigan
2024– University of Michigan ChemE Car Advisor**,** *American Institute of Chemical Engineers*
2024– Chair, Department Seminar Committee, *Department of Chemical Engineering*
2023– Academic Affairs Advisory Committee, *University of Michigan Faculty Senate*
2023– University of Michigan Student Chapter Advisor**,** *American Institute of Chemical Engineers*
2023 Leaders and Honors Awards Committee, *College of Engineering*
Harry B. Benford Award for Entrepreneurial Leadership
2022–24 Graduate Committee, *Department of Chemical Engineering*

Editorial & Advisory Boards

2024– ACS Chem & Bio Engineering, Early Career Advisory Board, American Chemical Society
2023– Nanoscale Horizons, Editorial Community Board, Royal Society of Chemistry
2020– ACS Materials Letters, Early Career Advisory Board, American Chemical Society

Academic Society and Professional Organizations

2025- Symposium Chair, Active and Responsive Matter, Division of Colloid & Surface Chemistry, American Chemical Society
2025 Area Chair, Composites, Materials Engineering & Science Division, American Institute of Chemical Engineers
2024-25 Division Chair, Nanoscale Science & Engineering Forum, American Institute of Chemical Engineers
2024 Discussion Leader, Collective Intelligence Session, Gordon Research Conference (Robotics)
2024 Session Chair, Advanced Hybrid Material, American Institute of Chemical Engineers
2024 Session Chair, Carbon Nanomaterials II: Dispersion, Surface Structure, and Biointeractions, American Institute of Chemical Engineers
2024 Session Chair, Dynamic Processes at Interfaces, American Institute of Chemical Engineers

2024 Session Chair, Path Towards Nanoscale Science and Engineering, American Institute of Chemical Engineers
2024 Session Co-Chair, Directed and Self Assembly of Colloids, American Institute of Chemical Engineers
2024 Session Co-Chair, Fibers and Coatings: 1D and 2D Composites, American Institute of Chemical Engineers
2024 Session Co-Chair, Nanoscale Science and Engineering Forum Division Plenary, American Institute of Chemical Engineers
2023 Division Vice Chair, Nanoscale Science & Engineering Forum, American Institute of Chemical Engineers
2023–24 Area Co-Chair, Composites, Materials Engineering & Science Division, American Institute of Chemical Engineers
2023 Session Chair, Carbon Nanomaterials I: Dispersion, Surface Structure, and Biointeractions, American Institute of Chemical Engineers
2023 Session Co-Chair, Active Colloidal Systems, American Institute of Chemical Engineers
2023 Session Co-Chair, Bio-inspired Composites, American Institute of Chemical Engineers
2023 Session Co-Chair, Dynamic Processes at Interfaces, American Institute of Chemical Engineers
2022 Review Committee, Carbon Nanomaterials Graduate Student Award Session (Nov. 14, 2022), American Institute of Chemical Engineers National Meeting
2019 Session Chair (Jun. 17, 2019), Active & Responsive Matter, ACS Colloidal and Surface Science Symposium, American Chemical Society

Peer Reviews
2024– Science Robotics, American Association for the Advancement of Science
2024– ACS Sensors, American Chemical Society
2024– ACS Nano, American Chemical Society
2023– Chemistry of Materials, American Chemical Society
2023– EcoMat, Wiley
2020– Nano Letters, American Chemical Society
2019– Advanced Functional Materials, Wiley
2018– Energy and Environmental Science, Royal Society of Chemistry
2018– Advanced Materials, Wiley
2017– Journal of American Chemical Society, American Chemical Society
2016– ACS Applied Materials & Interfaces, American Chemical Society

Review Panels
2025– Michigan Materials Research Institute, University of Michigan
2024– NSF Graduate Student Fellowship, National Science Foundation
2024– Office of Basic Energy Sciences (BES), Department of Energy
2023– National Defense Science and Engineering Graduate Fellowship, Department of Defense

PhD Thesis Committees
2025– Kate Jensen (Faculty Advisor: Sharon Glotzer), *Department of Chemical Engineering*
2025– Sophie Lee (Faculty Advisor: Sharon Glotzer), *Department of Materials Science and Engineering*
2025– Kate Kaplin (Faculty Advisor: Joerg Lahann), *Department of Chemistry*
2024– Carolina Espinoza (Faculty Advisor: Jovan Kamcev), 12/12/2024, *Department of Chemical Engineering*
2024– Carlos Morales (Faculty Advisor: Xiwen Gong), 12/16/2024, *Macromolecular Science and Engineering*
2024– Emily McCorkle (Faculty Advisor: Sasha Cai Lesher-Perez), 06/14/2024, *Department of Chemical Engineering*
2023– Andrew Jalbert (Faculty Advisor: Yiyang Li), 12/15/2023, *Department of Materials Science and Engineering*
2023– Zhengtao Hu (Faculty Advisor: Xiwen Gong), 12/12/2023, *Department of Materials Science and Engineering*
2023– Ignacio Blanco (Faculty Advisor: Sharon Glotzer), 12/19/2023, *Department of Chemical Engineering*
2023– Sijun Seong (Faculty Advisor: Xiwen Gong), 06/27/2023, *Department of Chemical Engineering*
2023– Oluwatosin Ohiro (Faculty Advisor: Bryan Goldsmith), 04/18/2023, *Department of Chemical Engineering*
2023– Fjorela Xhyliu (Faculty Advisor: Joerg Lahann), 09/22/2023, *Department of Chemical Engineering*
2023– Chih-Mei Young (Faculty Advisor: Michael Solomon), 07/25/2023, *Department of Chemical Engineering*
2023– Syahidah Mohd Khairi (Faculty Advisor: Michael Solomon), 06/01/2023, *Department of Chemical Engineering*

Master Thesis Committees
2022 Jierui Zhao (Faculty Advisor: Xiwen Gong), *Department of Materials Science and Engineering*

Department Seminars
2024 Faculty Host (Orlin Velev, North Carolina State University), Department Seminar, *Chemical Engineering*
2023 Faculty Host (Jose Mendoza, Michigan State University), Blue-Green Seminar, *Chemical Engineering*

Outreach Related to Teaching and Student Engagement

2024 Jihpeng Sun (PhD advisee), Mentor (Jan. 16–Apr. 24, 2024), ChemE Senior Product Design Team (Rebecca So, Aryav Panda, Sophia Lee, Emma Camp)
2025 Jongbin Won (PhD advisee), Jihpeng Sun (PhD advisee), AIChE Mentorship: Night with Research Event (Jan. 24, 2025)
2024 Faculty Panelist, University of Michigan Macromolecular Science & Engineering Symposium (Nov. 14, 2024)
2024 Sungwan Park (PhD advisee), NSF COMPASS STC Junior Scientist Board Treasurer
2024 Sungwan Park (PhD advisee) and Matthew Manion (PhD advisee), Graduate Student Recruiting Committee
2024 Chemical Engineering Graduate Student Symposium Judge (Oral and Poster Sessions) (Sep. 2024)
2024 ChE 595 Academic Panel (Invited by Bryan Goldsmith) (Sep. 2024)
2024 Chemical Engineering Undergrad Research Symposium Poster Judge (Mar. 2024)
2023 Matthew Manion (PhD advisee), Panelist, American Institute of Chemical Engineers (AIChE) Student Chapter (Oct. 19, 2023)
2023 Chemical Engineering Graduate Research Symposium Oral Presentation Judge (Sep. 21, 2023)
2023 Matthew Manion (PhD advisee), Co-Chair, Chemical Engineering Graduate Research Symposium (Sep. 21, 2023)
2023-24 Matthew Manion (PhD advisee), Graduate Student Peer-Mentor
2023 ChE 595 Academic Panel (Invited by Greg Thurber) (Sep. 19, 2023)
2023 Chemical Engineering Graduate Society Gradchat: Communicating Your Research (Apr. 30, 2023)
2023 Chemical Engineering Undergrad Research Symposium Poster Judge (Mar. 21, 2023)
2023 Faculty Chat: Decision Making (Mar. 01, 2023)
2023 Chemical Engineering Undergraduate Open House (Feb. 21, 2023)
2023 Chemical Engineering Graduate Society Gradchat: Goal Setting (Feb. 10, 2023)
2023 Faculty Chat: Where is Chemical Engineering Going? (Jan. 26, 2023)
2022 Chemical Engineering Graduate Society Gradchat: Social Styles (Nov. 29, 2022)
2022 ChE 230 Academic Panel (Invited by Jouha Min) (Nov. 15, 2022)
2022 ChE 230 Poster Session Judge (Invited by Jouha Min) (Nov. 04, 2022)
2022 Chemical Engineering Undergraduate Open House (Oct. 24, 2022)
2022 Chemical Engineering Graduate Student Symposium Judge (Oral and Poster Sessions) (Sep. 21, 2022)
2019 Panelist (Aug. 26, 2019), School of Engineering TA Training, *MIT*
2019 Panelist (May 02, 2019), Nord Anglia School STEAM Week, 'Using Visuals to Communicate Science', *MIT*
2018 Lecturer (Apr. 18, 2018), Digital Play Day: New Ways to Interface with Technology, Cambridge Science Festival, *MIT Museum*

Professional Development
2023-24 NIH R01 Bootcamp, UM School of Medicine (Sep. 11, 2023 – Apr. 22, 2024)
2023 Fireside Chat with President Santa Ono, Network to Advance Faculty of Color, UM-ADVANCE Program (May 30, 2023)
2023 DEI Teaching Circles (Options 1 & 2), Teaching Equity-Centered Engineering, Center for Research on Learning & Teaching in Engineering (May 2 – Jun. 1, 2023)
2023 Network to Advance Faculty of Color, UM-ADVANCE Program (Feb. 9, 2023)
2022 Everything is Fine: Mentoring to Support Graduate Student Mental Health Workshop, UM-ADVANCE Program (Dec. 7, 2022)
2022 Faculty Workshop on Holistic Graduate Admissions for Excellence and Diversity (Oct. 19, 2022)
2022 Workshop on the Key to Superior Teaching Performance (by Fawwaz Ulaby) (Oct. 06, 2022)

Outreach Activities Related to Research
2025 Nyvia Lyles (PhD advisee), Counselor (Jul. 6-12, 2025), Summer Engineering Exploration (SEE) Camp, the Society of Women Engineers, week-long opportunity for high school students to dive into STEM-related interests, *Ann Arbor*
2025 Nyvia Lyles (PhD advisee), Volunteer (Mar. 23, 2025), Tau Beta Pi Michigan Gamma Chapter STEM Symposium and LEGOS lab tour to share research and career interests with middle and high school students, *Ann Arbor*
2024 Jihpeng Sun (PhD advisee), Volunteer (Mar. 09, 2024), FEMMES Capstone activity to promote scientific literacy for fourth through sixth grade students, *Ann Arbor*
2023 Interdisciplinary Research Opportunities Program for Undergraduates in Semiconductor Technology, *Intel Cooperation and University of Michigan*
2023 Discover Engineering (Aug. 13, 2023), design hands on experience to broaden local high school students' interests in science and engineering, *Ann Arbor*
2023 Hosted high school student Fiona Nikolla (Utica Academy for International Studies) over the summer for hands-on research experience, *Ann Arbor*
2022 Matthew Manion (PhD advisee), Volunteer (Dec. 13, 2022), FEMMES Capstone activity to promote scientific literacy for fourth through sixth grade students, *Ann Arbor*