ANNUAL REPORT 2023-24

Northeastern University
Chemical Engineering

Northeastern University
College of Engineering

With over 240 tenured/tenure-track faculty and 20 multidisciplinary research centers and institutes with funding by eight federal agencies, the College of Engineering is a leader in experiential education and interdisciplinary research focused on discovering solutions to global challenges to benefit society. Northeastern's global university system—with engineering programs on campuses across the U.S. and in multiple countries—provides flexible academic offerings, innovative partnerships, and the ability to scale ideas, talent, and solutions.

About Northeastern

Founded in 1898, Northeastern is a global research university and the recognized leader in experiential lifelong learning. Our approach of integrating real-world experience with education, research, and innovation empowers our students, faculty, alumni, and partners to create worldwide impact.

Northeastern's personalized, experiential undergraduate and graduate programs lead to degrees through the doctorate in 10 colleges and schools across our 13 campuses worldwide. Learning emphasizes the intersection of data, technology, and human literacies, uniquely preparing graduates for careers of the future and lives of fulfillment and accomplishment.

Our research enterprise, with an R1 Carnegie classification, is solutions oriented and spans the world. Our faculty scholars and students work in teams that cross not just disciplines, but also sectors—aligned around solving today's highly interconnected global challenges and focused on transformative impact for humankind.

NORTHEASTERN

We are a leader in experiential education and interdisciplinary research, focused on innovating for global impact.

DEAR COLLEAGUES, FRIENDS, AND STUDENTS,

Our mission at the Northeastern University Department of Chemical Engineering is simple: to educate and train students in chemical engineering practice. As we continue to grow and expand the department, our efforts to best prepare our students evolve. For example, we spent the last year talking with industry to determine what they would want to see in MS students. These interactions led to the reconfiguration of our MS in chemical engineering program. Students choose their path (research, sustainability in chemical engineering, or biosystems) and gain depth in how chemical engineering principles are foundational to solving problems in these areas. We are nationwide leaders in utilizing inclusive teaching and mastery grading in our core undergraduate courses to improve student learning. Our doctoral students are participating in the LEADERS program to integrate leadership and professional skills with a research project in industry. At every level, our students learn that leaders in engineering will address global challenges that may not yet exist, so diversity of experience and thought is critical for their future.

With over 45 primary, joint, and affiliated faculty, we continue to grow, including welcoming two new faculty members in sustainability this year. Their expertise spans from the molecular design of proteins and protein materials for agriculture and environmental remediation to the human-centered design of plastics and materials. Several of our faculty have been recognized for their significant research and educational contributions, including the awarding of fellowship status in multiple societies. We are supported by multiple thrusts in research: biomolecular & biomedical systems, complex & computational systems, energy & sustainability, engineering education & pedagogy, and materials & nanotechnology, providing a wealth of opportunities for students to innovate in the food-water-energy nexus, healthcare systems, and AI for chemical engineering.

Northeastern's top-rated cooperative education (co-op) program plays an important role in our success. Chemical engineering co-op positions span the areas of consumer products, materials, biotechnology and biopharmaceuticals, nanotechnology, alternative energy, and energy storage, with students placed in positions both domestically and internationally. Through a combination of rigorous academics, research excellence, and professional experience, recent graduate students have taken industry and research positions at leading organizations such as Moderna, Takeda, SpaceX, Thermo Fisher Scientific, Lockheed Martin, and Deloitte, to name just a few.

I invite you to explore the highlights of our Department of Chemical Engineering and the research of our faculty and students through this Annual Report.

Sincerely,

Rebecca Kuntz Willits, PhD
Professor and Department Chair
Chemical Engineering
r.willits@northeastern.edu

For more details, visit our website at CHE.NORTHEASTERN.EDU.

Photo by Bella Martinez

Quick Facts **CHEMICAL ENGINEERING**

49 **TENURED/ TENURE-TRACK** + affiliated faculty

25 **Young Investigator** Awards, including **10** **National Science Foundation** CAREER Awards

14 **Professional** Society Fellowships

513 Students, **46%** are Women (Fall 2023)

68% of Tenured/Tenure-Track Faculty are Fellows or Young Investigator Award recipients

$16M **External Research Awards** (2022-2024)

Young Investigator Award 2024

Srirupa Chakraboty
Assistant Professor
National Institutes of Health R35 MIRA (Maximizing Investigators' Research Award) for Early-Stage Investigators

National Academy Member

Arthur Coury
University Distinguished Professor

Degree Programs

UNDERGRADUATE:

BS Chemical Engineering
BS Chemical Engineering and Biochemistry
BS Chemical Engineering and Bioengineering
BS Chemical Engineering and Computer Science
BS Chemical Engineering and Data Science
BS Chemical Engineering and Environmental Engineering
BS Chemical Engineering and Physics

GRADUATE:

PhD Chemical Engineering
MS Chemical Engineering (three concentrations)
MS Pharmaceutical Engineering

MS Concentrations

The MS in chemical engineering program now has three concentrations with research and course-based offerings. Choose from:

- General principles and applications
- Biosystems
- Sustainability

Quick Facts **COLLEGE OF ENGINEERING**

With **246** tenured/tenure-track faculty and **20** multidisciplinary research centers and institutes with funding by eight federal agencies, the college is a leader in experiential education and interdisciplinary research focused on discovering solutions to global challenges to benefit society.

5 **Engineering Departments**

142 **YOUNG INVESTIGATOR** Awards
Including **73** NSF CAREER Awards, and **24** DOD Young Investigator Awards

110 **Professional Society Fellowships**

3,274 **Total Co-op Hires** (AY2024)

2,420 **Co-op Employer Partners** (AY2022-2024)

TOTAL ENROLLMENT (Fall 2023)
10,481 65% Graduate
35% Undergraduate

Graduate Enrollment Growth up **63**% vs. 2018

New Faculty

Adam Caparco *DiPietro Assistant Professor*

Jointly Appointed: Chemistry and Chemical Biology
PhD: Georgia Institute of Technology, 2020
Previously: Postdoctoral Scholar, University of California, San Diego
Scholarship Focus: Agricultural and environmental biotechnology; affiliate for the Institute for Plant-Human Interface

Bryan James *Assistant Professor*

PhD: University of Florida, 2021
Previously: Postdoctoral Investigator/Scholar, Woods Hole Oceanographic Institution
Scholarship Focus: Fate, persistence, and toxicity of materials in the environment and the body to inform the design of functional, sustainable, and benign next-generation materials, products, and processes

Faculty by Research Area

Biomolecular and Biomedical Systems

Mansoor Amiji
Debra Auguste
Adam Caparco
Rebecca L. Carrier
Srirupa Chakraborty
Arthur Coury
Allison Dennis
Eno Ebong
Adam Ekenseair
Sara Hashmi
Francisco Hung
Bryan James
Abigail Koppes
Ryan Koppes
Carolyn Lee-Parsons
Steve Lustig
Marsha Rolle
Rebecca Sherbo
Ming Su
Rebecca Willits
Benjamin Woolston

Complex and Computational Systems

Magda Barecka
Rebecca L. Carrier
Srirupa Chakraborty
Damilola Daramola
Francisco Hung
Steve Lustig
Richard West
Qing Zhao

Energy and Sustainability

Magda Barecka
Damilola Daramola
Joshua Gallaway
Sara Hashmi
Francisco Hung
Bryan James
Carolyn Lee-Parsons
Laura Lewis
Steve Lustig
Courtney Pfluger
Hannah Sayre
Rebecca Sherbo
Ming Su
Richard West
Benjamin Woolston
Qing Zhao

Engineering, Education, and Pedagogy

Adam Ekenseair
Bryan James
Luke Landherr
Brian Lejeune
Courtney Pfluger
Behrooz Satvat
Rebecca Willits

Materials and Nanotechnology

Debra Auguste
Magda Barecka
Adam Caparco
Rebecca L. Carrier
Arthur Coury
Damilola Daramola
Allison Dennis
Eno Ebong
Adam Ekenseair
Joshua Gallaway
Sara Hashmi
Francisco Hung
Bryan James
Ryan Koppes
Laura Lewis
Steve Lustig
Marsha Rolle
Rebecca Sherbo
Ming Su
Rebecca Willits
Qing Zhao

$2M NIH Early-Stage Investigator R35 MIRA Award for a Computational Model To Make Biomedical Materials That Function Like Mucin

Srirupa Chakraborty, assistant professor of chemical engineering, received a $1.99 million National Institutes of Health R35 Maximizing Investigators' Research Award (MIRA) for Early-Stage Investigators to design and develop a computational model for making biomedical materials that function like mucin—a naturally occurring substance in the human body that serves as a protective layer on tubular organs and surfaces exposed to external environment. The biomaterials developed with Chakraborty's model, such as surgical glue or in drug delivery systems, would act as a protective layer, like mucin does naturally.

Mucins are glycoproteins that are densely populated with sugars, and they form the mucosal layer that helps prevent pathogens from reaching underlying tissue. For example, a mucin layer in the nose catches germs, bacteria, and debris that could harm the lungs.

"Mucins have so many unique and interesting properties that they could be inspiration for many of our material needs," Chakraborty says.

In order to design the model for biomaterials development, Chakraborty's research team will enhance existing computational tools, which she says are limited, as well as develop new tools to investigate mucin at the molecular level.

The team will use a multimodal approach for computational tools that will enable investigation of the mucin at different scales. They will use first-principles based atomistic modeling to capture the equilibrium structure-dynamics; biophysics-based coarse-grained methods to describe bulk properties and transitions; and data-driven machine learning approaches to predict topology and intermolecular interactions.

"Whatever we predict by computers should be a trustable model that could be scaled down to the atomistic level," Chakraborty says.

The team will investigate how some molecules are able to outsmart the mucin layer and pass through, while others cannot.

As an example, the models could be the foundation to design a new type of surgical glue that would protect an open wound from pathogens. Because the surgical glue will have a molecular structure similar to mucin, the body will not reject it as a foreign substance.

The protective properties could be expanded to a range of opportunities, even acting as a membrane between clean water and foreign bodies, Chakraborty says.

In addition to the MIRA Award, Chakraborty received a $100,000 related grant with collaborator Nanite Bio, a biotech startup founded by Shashi Murthy, a former Northeastern professor of chemical engineering, to develop a drug delivery system for the specific treatment of Cystic Fibrosis. This secondary research grant will rely on findings from the larger research project to create a drug delivery system that could penetrate mucin membranes that have mutated and thickened, resulting in Cystic Fibrosis disease.

"We will be making materials inspired by mucin to be able to get through the thickened mucosal layer," Chakraborty says. "We are going to piggyback on certain carriers that are present in those layers."

R35 MIRA Awards from the NIH are designed to provide investigators with greater stability and flexibility, thereby enhancing scientific productivity and the chances for important breakthroughs.

Photo by Alyssa Stone

Mucins have so many unique and interesting properties that they could be inspiration for many of our material needs."

Srirupa Chakraborty
Assistant Professor, Chemical Engineering

AIMBE Fellows

Eno Ebong, associate professor of chemical engineering and bioengineering, and **Mansoor Amiji**, University Distinguished Professor of pharmaceutical sciences and chemical engineering, were named Fellows of the American Institute for Medical and Biological Engineering. This prestigious honor is drawn from the top 2% of biomedical engineers. Ebong was elected "for outstanding contributions to the field of vascular and endothelial cellular mechanobiology, focused on glycocalyx-mediated health and disease mechanisms." Amiji was recognized "for pioneering contributions to nucleic acid delivery for treating a range of conditions using novel biomaterials and advanced nanotechnology systems." Additionally, **Rebecca Willits**, chair of the Department of Chemical Engineering, was elected to the AIMBE board of directors.

Photo by Bella Martinez

Photo by Matthew Modoono

Photo by Adam Glanzman

Controlled Release Society Fellow

Rebecca Carrier, Distinguished Professor of chemical engineering, was elevated to the College of Fellows of the Controlled Release Society. The CRS recognizes exceptional individuals who have made significant contributions to the field of delivery science and technology. Carrier's current research focuses on the interaction between biological systems and materials, with specific applications in drug delivery and regenerative medicine.

Photo by Adam Glanzman

Fellow of Scialog Sustainable Minerals, Metals, and Materials Initiative

Damilola Daramola, assistant professor of chemical engineering, jointly appointed in the College of Science, has been named a Fellow of the three-year Scialog initiative on Sustainable Minerals, Metals, and Materials, which is designed to spark advances in the mining, design, manufacture, and disposal of materials needed to achieve a more sustainable and low-carbon energy system. Scialog supports research, intensive dialogue, and community building to address scientific challenges of global significance. This interdisciplinary community of Fellows represents institutions across the U.S. and Canada.

$1.27M NSF Award for Engineering Clostridia for Sustainability and Human Health

Benjamin Woolston, assistant professor of chemical engineering, in collaboration with Tulane University and Tufts University, was awarded $1.27 million from the National Science Foundation for "New Approaches To Rapidly Domesticate Non-model Clostridia for Applications in Sustainability and Human Health." The research team is developing novel approaches to streamline genetic engineering of Clostridia, which are important microbes with diverse roles in biotechnology and human disease, but notoriously difficult to engineer.

Photo by Bella Martinez

Pioneering Technology To Convert Renewable Energy to Liquids

Magda Barecka, associate professor of chemical engineering, jointly appointed in the College of Science, was selected to lead a $986,200 Department of Energy project managed by the Advanced Research Projects Agency-Energy (ARPA-E) GREENWELLS program for "Modular Electrochemical Ethanol Production Using Intermittent Power (Electricity)." She is pioneering new technology to convert dilute carbon dioxide into a concentrated ethanol product using intermittent renewable electricity.

Research To Enhance Diversity in Engineering Departments

Research of **Rebecca Willits**, professor and chair of the Department of Chemical Engineering, on "Framework for Department-Level Accountability To Diversify Engineering" was published in *Nature Reviews Bioengineering*. The paper presents a framework for building, assessing, and continuously improving strategic plans to improve recruitment and retention and to make departments more inclusive.

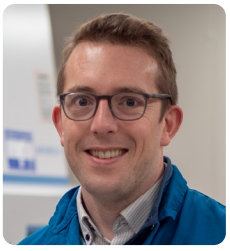
Boosting Solar Energy and Water Purification With Advanced Nanotechnology

Allison Dennis, associate professor of chemical engineering, in collaboration with Boston University, was awarded $708,937 from the National Science Foundation for "Interfacial Excitation Transfer in Hybrid Metal/Chalcopyrite Plasmonic Nanostructures." The research investigates charge and energy transfer between metal nanostructures and semiconductor nanocrystals through single particle spectroscopy. Optimization of these transfer processes has the potential to result in enhanced photocatalytic activity for the hybrid nanomaterials, and benefit society in areas such as solar energy conversion and wastewater remediation.

Photo by Bella Martinez

New Methods for Ammonia Electrosynthesis Modeling

Qing Zhao, assistant professor of chemical engineering, received a $537,226 National Science Foundation award for "Automated Embedded Correlated Wavefunction Theory for Kinetic Modeling in Heterogeneous Catalysis." She is investigating ammonia production with a goal of developing advanced computational modeling tools to understand fundamental chemistry in ammonia synthesis powered by renewable electrical energy/stored electrons.



Improving Synthetic Ecology for Studying Gut Bacteria

Benjamin Woolston, assistant professor of chemical engineering, in collaboration with Boston University, was awarded $900,000 from the National Science Foundation for "Synthetic Ecology of Mixed Aerobic/Anaerobic Microbial Consortia." The research addresses the constraints of a synthetic ecology approach by developing a low-cost bioreactor system for precise generation and simultaneous delivery of headspace gas mixtures across individual culture vessels in various cultures.

New Approaches for Blood Disease Treatments

Mansoor Amiji, University Distinguished Professor of pharmaceutical sciences and chemical engineering, published research on "Lipid Nanoparticles Target Haematopoietic Stem Cells" in *Nature Nanotechnology*. The research proposes a novel class of non-viral lipid nanoparticle (LNP)-based formulations for the in vivo delivery of genetic therapies to haematopoietic stem cells (HSC) in the bone marrow with the potential to treat blood disorders.

New Methods To Improve Phosphorus Recovery

The research of **Damilola Daramola**, assistant professor of chemical engineering, jointly appointed in College of Science, on "Considerations for Electrochemical Phosphorus Precipitation: A Figures of Merit Approach" was published by The Electrochemical Society. The research focuses on the significant advantages of the emerging technology electrochemical phosphorus precipitation (EPP) compared to traditional phosphorus recovery and the large gaps in reported performance that exist between EPP methods and EPP and industrial methods.

Learn more about our accomplished faculty

Student Successes

SELECTED HIGHLIGHTS

2024 National Science Foundation Graduate Research Fellowship Program Award Recipients

Hannah Boyce, E'21, chemical engineering, and **Shalom Fadullon**, PhD'27, chemical engineering, were recipients of the prestigious 2024 National Science Foundation Graduate Research Fellowship, which recognizes and supports outstanding graduate students who have demonstrated the potential to be high-achieving scientists and engineers early in their careers.

Hannah Boyce, E'21

Shalom Fadullon, PhD'27

American Heart Association Predoctoral Fellowship

PhD student **Nicholas O'Hare**, chemical engineering, received a Predoctoral Fellowship from the American Heart Association for his project "The Role of the Endothelial Glycocalyz in Alzheimer's Disease Neurovascular Pathology."

Donald F. & Mildred Topp Othmer Scholarship

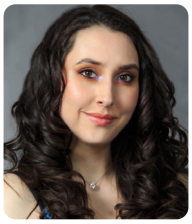
Lina Abu-Absi, E'24, chemical engineering, is the recipient of the 2022-2023 Donald F. & Mildred Topp Othmer Scholarship Award, which is awarded to 15 American Institute of Chemical Engineers students annually for their outstanding academic achievement and involvement in student chapter activities.

'Emerging Investigators' in the Journal Software Matter

Sara Hashmi, assistant professor of chemical engineering, and **Barrett Smith**, PhD'24, chemical engineering, were recognized as part of the "Emerging Investigators" series of the Royal Society of Chemistry journal *Soft Matter*. Smith was first author of their paper, "In Situ Polymer Gelation in Confined Flow Controls Intermittent Dynamics," which uncovers novel flow behavior in crosslinking biopolymers.

2024 Condit Award

Dominic Pizzarella, E'25, chemical engineering and biochemistry, received the Sears B. Condit Award, one of the highest honors that a junior or senior can receive. Pizzarella is interested in disease research and has worked in the laboratory of Ryan Koppes, associate professor of chemical engineering, for two years studying organ-on-chip technology.



Wendy Breen Kline Award

Caro Aguilera Barraza, E'24, chemical engineering, is the recipient of the Wendy Breen Kline Award, which is presented to one undergraduate senior who embodies both leadership and volunteer spirit.

Inventors on U.S. Patent

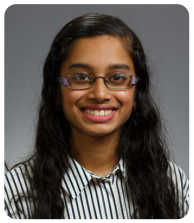
Hannah Giusti, E'25, and **Graham MacDonald**, E'25, chemical engineering, were named inventors on a U.S. patent for a groundbreaking PFAS treatment. They contributed to this development while on co-op at Practical Applications, Inc. The advanced PFAS treatment technology, which offers an improvement for public water system operators, ensures compliance with EPA drinking water standards while dramatically reducing treatment costs compared to existing adsorption methods. The new process also eliminates the production of toxic residuals, a common issue with current treatment methods.

AIChE 35 Under 35

Chris Cogswell, PhD'17, chemical engineering, received the 2023 AIChE 35 Under 35 Award from the American Institute of Chemical Engineers. The award recognizes an outstanding member of the Oracle for Research community who uses the capabilities of OCI to drive impactful research on a global scale. It also recognizes Cogswell's outstanding achievements in professional and scientific endeavors.

Outstanding Master's Student Award in Teaching

Rahul Bhaveshbhai Kapadiya, MS'24, chemical engineering, is the recipient of the Outstanding Master's Student Award in Teaching from Northeastern, which honors excellence in teaching and positively impacting academic success.



National AIChE Undergraduate Poster Competition Winners

Ira Hysi, E'25, chemical engineering, and **Nethra Iyer**, E'24, chemical engineering, won first and third place, respectively, for their research presented in poster format at the national American Institute of Chemical Engineers (AIChE) Annual Meeting in the Undergraduate Poster Competition. They are advised by **Luke Landherr**, Distinguished Teaching Professor of chemical engineering.

Student Spotlights

Shicheng Yang, PhD'24

CHEMICAL ENGINEERING

Advised by Srinivas Sridhar, University Distinguished Professor of Physics, and Eno Ebong, Associate Professor of Chemical Engineering and Bioengineering

After receiving a master's degree in pharmaceutical sciences from Northeastern in 2018, **Shicheng Yang** began pursuing a PhD in chemical engineering and a graduate certificate in nanomedicine. His research focuses on innovative drug delivery systems, including polymeric implants and lipid nanoparticles, for cancer treatment. These formulations are designed to improve drug pharmacokinetics, overcome the emergence of drug resistance, and minimize drug toxicity.

Yang contributed to six peer-reviewed journal articles, serving as lead author on five. To date, four are published. He delivered three oral presentations and 13 poster presentations at conferences and research expos. Yang also participated in several cross-disciplinary collaborations with several health care organizations, including The University of Texas Health Science Center, Harvard Medical School, Brigham and Women's Hospital, and the Dana-Farber Cancer Institute.

In 2024, Yang was named an inventor on "Processes for Nanoformulation of Molecular Inhibitors and Chemotherapeutics," work that has been filed as a disclosure with Northeastern's Center for Research Innovation.

Yang served as a mentor to 16 students at CaNCURE, a program funded by the National Cancer Institute. His students produced or contributed to research papers, abstracts, and posters. Of that group, 10 are now pursuing PhD or MD programs, and six are employed at major pharmaceutical companies.

He completed a one-year internship at Theranano, a company that focuses on nanoparticles and depot technologies that was founded by his advisor, Srinivas Sridhar. Yang refined a hot-melt extrusion method for implant fabrication, transitioning the technique from laboratory scale to GMP-compliant production processes. The fabricated implants are being tested in large animal models at Dartmouth Hitchcock Medical Center in Lebanon, New Hampshire, as the next step towards clinical translation.

In 2024, Yang was inducted into Northeastern's Lux. Veritas. Virtus. society of distinction. After graduation, Yang is continuing his research at Theranano.

Personalized Path Leads to Pursuing a PhD

Looking for options to find her path, **Julia Treese**, E'24, chemical engineering, chose Northeastern because she knew it could provide her a variety of opportunities.

"I actually came in completely undecided in the Explore program, and I enjoyed going to the engineering open houses and learning more about different things that people were doing with engineering degrees," she says. Treese chose chemical engineering as the best choice for her.

Her first co-op was at CONTINUUS Pharmaceuticals. The company's main role is manufacturing, but Treese worked specifically with the analytics team. This work mostly consisted of routine lab operations, but it gave her the chance to get a sense of how the manufacturing process was conducted. Between the chemical engineering and biotech knowledge she gained, it was a successful introduction to the workforce.

"It made me want to continue with more experimental work for future co-ops," Treese says. "It also introduced me to the pharmaceutical industry and led me to learn that I was a little bit more interested in biotech rather than the straight chemical side of things."

Treese took advantage of this new interest in biotech on her second co-op at Sana Biotechnology, Inc. as part of the upstream process development team. Durng her time at Sana she made a significant decision about furthering her education.

"A PhD is really useful and valuable in the biotech industry if you want to go into research and development roles that are higher-level scientific roles," Treese says.

Once she returned to the classroom, Treese found that the work she did on co-op gave her a lot of context for the work she continued in her classes, particularly in her Process Control course.

"We're learning about certain types of control systems, and the bioreactors that we were using at Sana obviously had many types of control systems in them," Treese says. "So it's nice to be able to know how these control systems that we're learning about are applied in industry."

Treese also gained a better understanding of specifically the type of work she wants to do within the biotech industry. Working at CONTINUUS helped her realize that analytics weren't for her, but she maintained an interest in many of the concepts that she dealt with there.

For her third co-op, Treese conducted research in the Nanomedicine Innovation Center at Northeastern. She was paired with this research lab in partnership with the CaNCURE program, which provides opportunities for students to conduct cancer research. During her time in the lab, she worked with University Distinguished Professor of Physics **Srinivas Sridhar**.

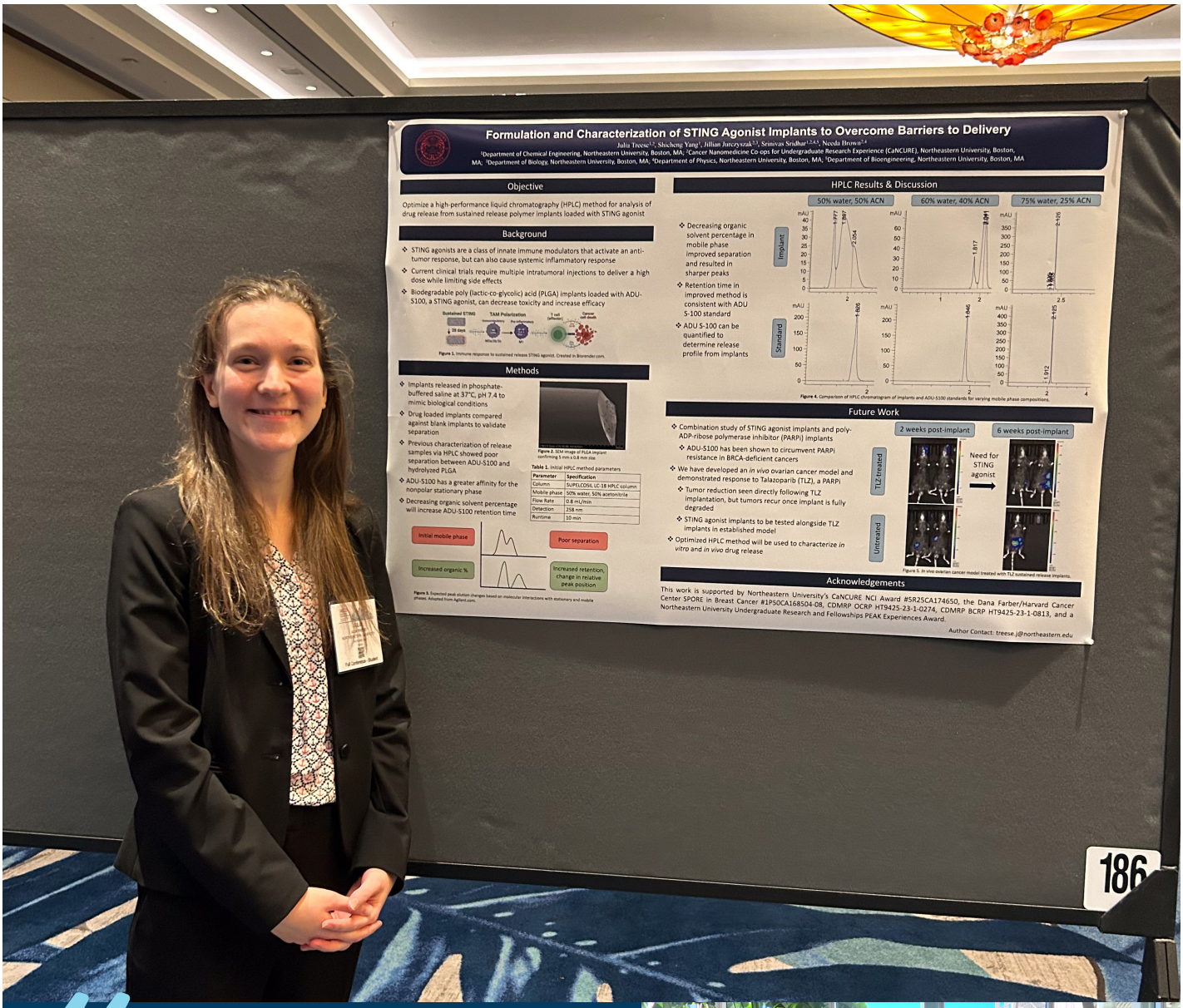
Outside of co-op, Treese stayed deeply involved with the Society of Women Engineers, or SWE, since her first year, even serving as president and vice president among other positions. For her, SWE was the ultimate opportunity to connect with women who share a deep passion for engineering and understand gender-related struggles within the industry. She also found it to be an excellent networking resource for co-op.

"The networking I did helped me get my second co-op at Sana because I spoke to the person who eventually interviewed me there," Treese says.

She was also involved with the American Institute of Chemical Engineers, ChemE Car, and Engineers Without Borders. These opportunities provided a plethora of hands-on experiences that not only prepared her for co-op but enhanced her experience after co-op. They took her to several conferences across the country, further expanding her already wide network.

Treese also applied for and received Northeastern's Office of Undergraduate Research and Fellowships' PEAK Summit Award and a PEAK Shout-It-Out Travel Award, which allowed her to attend a national conference in Orlando for a research poster presentation. "That felt really big for me because it was the first time that I had ever really presented research to a more public audience," she says.

After grad school, Treese hopes to make a real impact on life-saving therapies for patients, albeit with a specific goal in mind. "I want to do that in a way that prioritizes patients," she says.



A PhD is really useful and valuable in the biotech industry if you want to go into research and development roles that are higher-level scientific roles, and so that's how I decided that I wanted to pursue a PhD."

Julia Treese, E'24
Chemical Engineering

Julia Treese, E'24, chemical engineering, started her Northeastern journey in the Explore program. After three co-ops and a variety of extracurriculars, she has found that biotech is her calling.

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Chemical Engineering

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COVER IMAGE

Srirupa Chakraborty, assistant professor of chemical engineering, received a $1.99 million National Institutes of Health R35 Maximizing Investigators' Research Award (MIRA) for Early-Stage Investigators to design and develop a computational model for making biomedical materials that function like mucin–a naturally occurring substance in the human body that serves as a protective layer on tubular organs and surfaces exposed to external environment. Read the full article on page 4.

Photo by Alyssa Stone/Northeastern University