

SHARING YOUR VOICE CENTERING YOUR PURPOSE

4TH ANNUAL GRAD WIE NETWORK SYMPOSIUM

FEBRUARY 25, 2025



PURDUE
UNIVERSITY®

Women in Engineering Program

SHARING YOUR VOICE, CENTERING YOUR PURPOSE

FEBRUARY 25, 2025

ACTIVITIES TO CENTER YOUR PURPOSE

Make the Symposium your own, we offer multiple activities to participate in:

Symposium Passport

Travel to every session! Like a passport, collect all the stamps throughout the sessions to showcase your support for your peers and dedication to learning. The back cover of this booklet features blank squares to collect a stamp for each session attended. Enjoy different presentation styles and learn from your peers! Make sure to get your stamps and spell out P-U-R-D-U-E!

Post-it Your Purpose

Did you notice the big Purdue P board near registration? The theme of this year's symposium is *Sharing Your Voice, Centering Your Purpose*! We challenge you to write down your purpose and post-it on the Purdue P!

Compliment Cards

Enjoy a presentation or think someone is a rockstar? Embrace the opportunity to express admiration and appreciation for your peers by sharing positive sentiments on specially designed cards placed in your name badge. We encourage you to exchange these cards to create a positive and uplifting environment at the symposium and enhance your personal and professional connections!

Networking Sticker Swap

Connect with your fellow grad students and swap stickers! Your name badge contains a unique collection of stickers. As you interact with others throughout the day, take the opportunity to discover shared interests or traits. When you find something in common with someone, exchange stickers and use them to personalize your name badge!

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SYMPOSIUM AT A GLANCE

9:00 AM: Sign-in Opens

9:30 AM- 10:15 AM: Opening Plenary (STEW 302) featuring Dr. Jessica Sargent-Brown

10:15 AM - 10:30 AM: Transition & Break

10:30 AM- 11:50 AM: Session 1 - Traditional Talks

Noon - 1:15 PM: Lunch & Alumnae Panel (STEW 302)

1:15 PM - 1:30 PM: Transition & Break

1:30 PM - 2:30 PM: Session 2 - Grand Challenges Discussions

2:30 PM - 2:45 PM: Transition & Break

2:45 PM - 3:45 PM: Session 3 - Pecha Kucha & Traditional Talks

4:00 PM - 5:30 PM: Closing Reception (STEW 306)

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AGENDA

9:00 AM: Sign-in Opens

9:30 AM- 10:15 AM: Opening Plenary featuring Dr. Jessica Sargent-Brown

10:15 AM - 10:30 AM: Transition & Break

10:30 AM- 11:50 AM: Session 1 - Traditional Talks

Room 1: Traditional Talks (STEW 214 A/B)

Alum in the Room: Jessica Sargent-Brown & Caralyn Stevenson

Moderator: Reshma Chandrasekar

Students' Views of the Challenges and Strategies Encountered when Engaged in
Computational Modeling and Simulation

Joreen Arigye, Engineering Education

Decision-Support Tool for Commercial Space Integration in Civil Space Exploration
Missions

Dalia Bekdache, Aeronautical and Astronautical Engineering

Revolutionizing Autonomic Dysreflexia Detection: Rat-to-Human Transfer Learning
for Personalized Models

Seeun Kim, Biomedical Engineering

A Differential Game based Approach for Managing Opioid Crisis

Monika Tomar, Industrial Engineering

Canonical Surface Phase Diagrams for Disordered CoMo Alloys

Zuhal Cakir, Chemical Engineering

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AGENDA

10:30 AM- 11:50 AM: Session 1 - Traditional Talks

Room 2: Traditional Talks (STEW 214 C/D)

Alum in the Room: Jackie McDermott & Claire Liu

Moderator: Shanmukhi Sripada

How do Safety Invention Tools, Such as Exoskeletons, Impact Cognitive and Physical Performance in Construction?

Hyewon Seo, Civil Engineering

Tissue Expansion After Mastectomy Mitigates Radiation-Induced Skin Fibrosis in a Porcine Model

Laura Nunez, Biomedical Engineering

Process Intensification for End-To-End Synthesis and Purification of ONcology Drugs

Ilke Aktruk, Chemical Engineering

Quantifying the Intercellular Processes of Ebolavirus Transmission using Multi-Scale Agent Based Model

Himabindu Kovvali, Biomedical Engineering

Benchmarking the Effects of Mechanical Stimulation in Chondrocyte-Seeded Collagen-Agarose Hydrogels

Hong-Anh Nguyen, Biomedical Engineering

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AGENDA

10:30 AM- 11:50 AM: Session 1 - Traditional Talks

Room 3: Traditional Talks (STEW 218 A/B)

Alum in the Room: Bich-Van Pham & Elizabeth Sanders

Moderator: Raquel Ruiz

Reliability Testing for Counterfeit Devices with Intrinsic Odometer Approach

Archana Dharanipragada, Electrical and Computer Engineering

Role of Hydrologic Modeling Goals on Evaluation of Sobol' Sensitivity Indices for Model Parameters

Rishitha Bikkumalla, Civil Engineering

Evaluation of High School Semiconductor and Microelectronics Summer Program

Shauna Adams, Engineering Education

Controlled Growth of 2D Perovskite for Low-Threshold Laser

Jeong Hui Kim, Chemical Engineering

Design of Ties and Tie-to-Faceplate COnnnections for Steel-Plate COmposite (SC) Structures

Kaitlyn Kondos, Civil Engineering

A Study on Motivation and Supports for Volunteers in Engineering Youth Programs

Shauna Adams, Engineering Education

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AGENDA

10:30 AM- 11:50 AM: Session 1 - Traditional Talks

Room 4: Traditional Talks (STEW 218 C/D)

Alum in the Room: Jinsha Li & Jen Rich

Moderator: Allison Komrska

Protein Therapeutics Movement in the Vitreous Humor: Measurement and Imaging of Intra Matrix IgG Diffusion

Riya Debbarma, Agricultural and Biological Engineering

Inorganic-Rich Solid-Electrolyte-Interphase Enabled by Fluorinated Ether Electrolyte Design for Silicon-Based Anodes

Esin Aydemir, Chemical Engineering

Constructing a Decellularized Extracellular Matrix Containing Interpenetrating Network Hydrogel to Probe Cell-Material Interactions

Tuba Marjan, Biomedical Engineering

Prognostics of Lithium-Ion Battery Life Derived from Early Cycled Performance Metrics

Pretty Mitra, Mechanical Engineering

Enhanced Performance and Thermal Stability in Lithium-Ion Batteries through Phosphate-Integrated Electrolyte

Annie Sun, Chemical Engineering

11:50 AM - Noon: Transition & Break

Noon - 1:15 PM: Lunch & Alumnae Panel

1:15 PM - 1:30 PM: Transition & Break

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AGENDA

1:30 PM - 2:30 PM: Session 2 - Grand Challenges Discussions

Room 1: Sustainability (STEW 214 A/B)

Alum in the Room: Jinsha Li & Caralyn Stevenson

Moderator: Shanmukhi Sripada

Quantifying Carbon Footprint in Industrial Heat Treatment Processes through Life Cycle Assessment

Lakshmi Srinivasan, Mechanical Engineering

Evaluating the Degradation of Thermal Interface Materials in Liquid Immersion Cooling Systems using Ultrasonic Methods

Jacey Birkenmeyer, Mechanical Engineering

3D Simulation of Ignition characteristics in the Head Vortex of Hot Jets for Wave Rotor Combustion

Shahrzad Ghadiri, Mechanical Engineering

Room 2: Health (STEW 214 C/D)

Alum in the Room: Claire Liu & Bich-Van Pham

Moderator: Burla Ondes

Rapid Diagnostic Tests: A Game-Changer for Cervical Cancer Screening in Low-Resource Settings

Sayeh Jalali Dowlatshahi, Biomedical Engineering

Early Point-of-Care Hepatitis C Detection Through a Portable Amplification Assay

Samantha Mata-Robles, Biomedical Engineering

Left Ventricular Kinetic Energy and Energy Loss as Novel Echocardiographic Biomarkers in Sepsis Prognostication

Shailee Mitra, Mechanical Engineering

Assessing Algorithm Bias in Clinical Decision Support Tools for Acute Myocardial Infarction Patients: A MIMIC IV Cohort Study

Emily Garcia, Industrial Engineering

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1:30 PM - 2:30 PM: Session 2 - Grand Challenges Discussions

Room 3: Health (STEW 218 A/B)

Alum in the Room: Jackie McDermott & Jen Rich

Moderator: Raquel Ruiz

Grand Challenges: Health - Dynamic Granular Hydrogels as an In Vitro Cancer Model

Ellen Frahm, Biomedical Engineering

Development of a Sustained-Release Dorzolamide Implant for Long-Term Intra-Ocular Pressure Reduction in Glaucoma

Samridhi Kulshrestha, Biomedical Engineering

Bone Plate Design Optimization Using FEA Analysis

Aishcarya Joshi, Aeronautical and Astronautical Engineering

Room 4: Sustainability (STEW 218 C/D)

Alum in the Room: Jessica Sargent-Brown & Elizabeth Sanders

Moderator: Morgan Smith

Solving the Automotive Recycling Dilemma

Alyson Pickering, Materials Engineering

Domestic Graphite Mining in the U.S.: A Case Study on the Extraction of Critical Materials in Alaska

Camila Cassunde, Environmental and Ecological Engineering

Enhancing Energy Efficiency in Polysulfide Redox Flow Batteries by Using Ni, Cu, and Co as Catalysts

Mahla Sarfaraz Khabbaz, Mechanical Engineering

2:30 PM - 2:45 PM: Transition & Break

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2:45 PM - 3:45 PM: Session 3 - Pecha Kucha & Traditional Talks

Room 1: Pecha Kucha & Traditional Talks (STEW 214 A/B)

Alum in the Room: Jackie McDermott & Jinsha Li

Moderator: Allison Komrska

Design and Validation of Test Structures for Space Manufacturing
Chelsea O'Donnell, Mechanical Engineering

Dynamic Fracture Initiation and Propagation in Notched Specimen of Titanium
(Ti-6Al-4V) and Aluminum (Al 2024) Alloys
Aishvarya Joshi, Aeronautical and Astronautical Engineering

A Framework for Flight Resource Optimization: Safety, Technology, Well-being, and
Infrastructure for Northern Geography
Suzanne Swaine, Aeronautical and Astronautical Engineering

Seismic Stability of Lunar Lava Tubes
Juliana Pereira, Civil Engineering

Exploring Factors Influencing Crew Resilience in m:N (multi) small Unmanned
Aircraft Systems (sUAS) Beyond Visual Line of Sight (BVLOS) Surveillance
Operations
Radhika Bhopatkar, Environmental and Ecological Engineering

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Room 2: Pecha Kucha & Traditional Talks (STEW 214 C/D)

Alum in the Room: Elizabeth Sanders & Caralyn Stevenson

Moderator: Burla Ondes

Exploratory Research on Pre-College Teachers' Experiences Implementing
Environmental Justice Curriculum
Rachel Higbee, Engineering Education

The Future of Cementitious Materials: Utilizing Natural Pozzolans for Sustainable
and Resilient Infrastructure
Bibigul Zhaksybay, Civil Engineering

Leveraging Additive Manufacturing to Better Understand Nondestructive
Evaluation
Jacey Birkenmeyer, Mechanical Engineering

Neighborhood-Level Electrification: Strategic Approaches for Equity and
Environmental Benefits
Nadah Al Theeb, Mechanical Engineering

Sustainability: Pushing Photovoltaics Forward: The Promise and Challenges of
Chalcogenide Perovskites Kiruba
Catherine Vincent, Chemical Engineering

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Room 3: Pecha Kucha & Traditional Talks (STEW 218 A/B)

Alum in the Room: Bich-Van Pham & Jen Rich

Moderator: Reshma Chandrasekar

The Effect of Weighted Tape on Tennis Racket Sweet Spot Size and Location
Adeline Ripberger, Materials Engineering

Extreme Shock Absorption Using Multistable Mechanical Metamaterials
Sneha Srikanth, Mechanical Engineering

It was broken when I called you... Implications of No Fault Found Events in
Aerospace Systems and a Tool for Decision Making
Zofia Stawiarska, Aeronautical and Astronautical Engineering

Investigating Embedded Sensing in Metamaterials for Thermal Management
Applications
Amanda Stone, Mechanical Engineering

Control Effectiveness: The Probability of Availability
Megan Rush, Aeronautical and Astronautical Engineering

4:00 PM - 5:30 PM: Closing Reception

Join us for networking over hors d'oeuvres and see who receives
travel grant awards!

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ALUMNAE & GUESTS

Jinsha Li

Jinsha Li earned both her M.S. (2015) and Ph.D. (2019) in Agricultural and Biological Engineering. She began her career at ADM, one of the world's largest nutrition companies, where she spend nearly six years in R&D developing ingredient solutions for food and beverage. During her time at ADM, she also worked as a Project Manager in the Process Engineering group, tackling large-scale innovations from concept to execution. Eager to take on new challenges, she transitioned to the business side of innovation, joining Tate & Lyle as a Product Manager for texturants and proteins. Now, she combines her technical expertise with market strategy to bring ingredient solutions to life. When she's not immersed in the world of food science, she enjoys exploring nature on long walks, dancing (which she insists is better than coffee for an energy boost), and hosting a podcast-a passion project she's been running for the past two years. She currently lives in Schaumburg, IL, with her husband and their son, who keeps life both busy and exciting. With a unique blend of technical expertise, industry experience, and a passion for innovation, Jinsha Li is excited to share her journey and insights with the next generation of Purdue engineers.



Claire Liu

Claire Liu earned her PhD in Chemical Engineering from Purdue University in 2019 and is currently a Senior Scientist at Johnson & Johnson. Passionate about problem-solving, she enjoys using mathematics and engineering principles to tackle complex challenges and is always eager to learn new things. Having navigated a career transition herself, Claire understands the challenges of career pivots and enjoys supporting early-career engineers as they explore diverse career paths. She and her husband live in Princeton, NJ and have a cat named Benji. Outside of work, she loves crocheting, exploring new outdoor activities, and indulging in all things food.



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ALUMNAE & GUESTS

Jackie McDermott

Dr. Jackie McDermott joined the Purdue Engineering Dean's Office for Graduate Education in August 2018 and is the Associate Director of Graduate Student Partnerships and Access. Dr. McDermott completed her B.S. in Biology from Hofstra University (NY) with minors in Spanish and Biochemistry, and her Ph.D. in Molecular and Cellular Biology from Brandeis University (Boston, MA). As the first person in her family to obtain a graduate degree, Jackie is enthusiastic about preparing future graduate students as well as supporting current graduate students during their Master's and Doctoral studies. Jackie has over 8 years of higher education administration experience, including serving as Co-PI on Alfred P. Sloan Foundation grants that support graduate students. Jackie is specifically focused on broadening participation within the engineering community (student, staff, and faculty).



Bich-Van Pham

Bich-Van is an R&D Associate Director on the Global Disruptive Innovation team at Kraft-Heinz, to drive more innovation growth by delivering consumer centric solutions with a technical advantage. She has 15+ years of experience in the Food and Beverages consumer packaged goods (CPG) industry, spanning discovery, product innovation, commercialization, packaging, and project management within both FDA and USDA. Bich-Van received her PhD in Chemical Engineering from Purdue University and her BS in Chemical Engineering from Northwestern University. She is a strong advocate for DE&I and for STEM, thru the Society of Women Engineers, business resource groups, and beyond. Bich-Van is married and has two young children. Her other interests include eating (benefit of working in the food industry!), traveling, photography/arts/crafts, and reading (if she has any time to spare).



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ALUMNAE & GUESTS

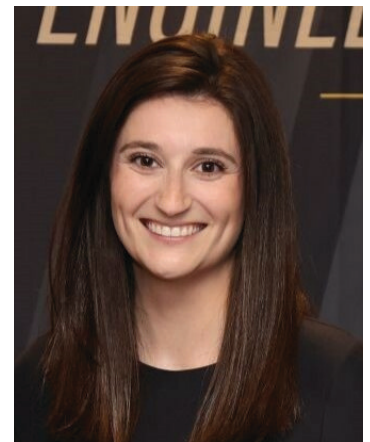
Jen Rich

Jen Rich is currently an Associate Director leading R&D for Kraft Heinz's joint venture partnership with the Not Company, bringing delicious plant-based products to people and their families. She earned her doctorate from Purdue ABE for her work on cell surface biomaterials and made the decision to apply that knowledge to product development in the food industry shortly after graduation. She's spent nearly 10 years of working on innovation, technology, and stewardship of iconic brands and continues to love the new challenges and learning opportunities that come with a career in the CPG industry. Jen lives in the Chicago suburbs with her husband, 2 kids, and dog, and she enjoys spending time with family and friends, fiber arts, gardening, and hobby fermentation!



Elizabeth Sanders

Dr. Elizabeth Sanders is a Postdoctoral Research Associate at the University of Illinois Chicago, in the College of Engineering's Undergraduate Affairs Office. Elizabeth graduated from Purdue University with her Ph.D. in Engineering Education in 2024. She completed her M.A. in Higher Education at the University of Michigan (2020) and B.S. in Chemical Engineering at the University of Illinois Urbana-Champaign. Elizabeth is passionate about supporting engineering students through co-curricular initiatives centering on academic, professional, and personal development, and her research focuses on human-centered design and empathy. While at Purdue University, Elizabeth earned the Wadsworth Graduate Mentoring Award from the Women in Engineering Program, and both the Outstanding Teaching / Mentoring Award and the Graduate Student Outstanding Service Award from the School of Engineering Education. Elizabeth was a Graduate Women in Engineering Leadership Team member for two years during her doctoral studies at Purdue University. Elizabeth loves to spend her time enjoying the outdoors, baking, exploring restaurants in Chicago, and getting together with friends!



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ALUMNAE & GUESTS

Jessica Sargent-Brown

Jessica Sargent-Brown holds a B.S. in Polymer & Fiber Engineering from Auburn University and an M.S. in Chemical Engineering and Ph.D. in Materials Engineering from Purdue University. During her Ph.D. program, she also worked as the graduate research assistant for the WiE Pre-College Outreach program. After graduating in 2020, Jessica worked in materials R&D for electronic warfare at the Naval Surface Warfare Center, Crane Division before returning to West Lafayette to join Cook Advanced Technologies as a research engineer, where she currently works on early-stage medical device development. She and her husband have 4 fur babies and currently spend their free time remodeling and building up a small home farm.



Caralyn Stevenson

Caralyn Stevenson holds a B.S. in Chemical Engineering from New Mexico Tech and Ph.D in Chemical Engineering from Purdue University, where her Ph.D. research focused on particle adhesion and powder technology. During her time at Purdue, Caralyn was a member of the leadership team for the Graduate in Women Engineering Program and was actively involved in the Women in Engineering Program Summer ACCESS Program. After earning her Ph.D., she joined Merck Animal Health as a Senior Scientist in formulation. In her role as an animal health formulation scientist, Caralyn develops dosage forms for medications specifically designed for animals. She continues to advocate for women in engineering through her involvement in the Society of Women Engineers at Merck. Outside of work, Caralyn enjoys outdoor activities such as hiking or gardening with her husband and their dog.



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ABOUT THE WOMEN IN ENGINEERING PROGRAM

History

Established in 1969, the Purdue Women in Engineering (WiE) Program was the first of its kind in the nation and has been a model for such programs at other universities. Since then, the enrollment of women in the College of Engineering has increased from less than one percent to the current 26 percent. To date, the College of Engineering has granted more than 13,000 engineering degrees to women, thanks in large part to the WiE Program's efforts.

Mission

The Women in Engineering Program at Purdue University is dedicated to enriching the profession of engineering through the full participation of women. We develop and direct activities that provide:

- encouragement for girls and young women to study engineering
- information about careers and companies
- an environment conducive to the successful completion of students' studies

We also strive to maintain strong relationships with alumnae, friends, corporations, and foundations who generously support our program.

Objectives

- To provide career information and encouragement to pre-college girls and young women to continue achievement in math and science and consider engineering as an appropriate career choice.
- Encourage women to matriculate at Purdue University in the College of Engineering.
- Ensure a climate in the College of Engineering that allows young women to reach their full potential.
- Provide opportunities for women engineering students to develop leadership skills that can be utilized in their future lives.
- Encourage women to consider graduate education and academia among their options upon graduation.
- Maintain open communication with alumnae and their employers to encourage their continued participation in and support of the Women in Engineering Program.

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NOTES

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ABOUT THE GRAD WIE NETWORK

Mission

To provide strategies within a supportive community for women engineering graduate students to advance personally, academically, and professionally.

Objectives

Community | To establish an inclusive network that affirms, inspires and supports women and gender minorities throughout their engineering graduate career.

Strategies | To provide opportunities to develop skills and introduce strategies for professional and personal development

Advancement | To provide an enriching experience that encourages individual growth, and furthers the community of women engineers

GRAD WIE NETWORK LEADERSHIP TEAM

Dr. Suzanne Zurn-Birkhimer, Senior Associate Director, Women in Engineering Program

Cathy Deno, Senior Administrative Assistant, Women in Engineering Program

Reshma Chandrasekar, MS Student, Aeronautics and Astronautics

Allison Komrska, MS Student, Nuclear Engineering

Burla Ondes, Ph.D. Candidate, Industrial Engineering

Raquel Ruiz, Ph.D. Candidate, Civil Engineering

Morgan Smith, Ph.D. Student, Materials Engineering

Shanmukhi Sripada, Ph.D. Candidate, Mechanical Engineering

SYMPOSIUM PASSPORT

Opening
Plenary

Session 1

Lunch &
Alumnae Panel

Session 2

Session 3

Closing
Reception