

SHARING YOUR VOICE EXTENDING YOUR REACH

**2ND ANNUAL
GWEN SYMPOSIUM**

FEBRUARY 7, 2023

Program Booklet



Women in Engineering Program

SYMPOSIUM NETWORKING ACTIVITIES

Throughout the Symposium, we offer multiple activities to participate in:

Professional Headshots

Have your picture taken by a professional photographer to elevate your LinkedIn profile, or other networking sites! The photographer will be located in STEW 306 and will be available from 9:00am-9:30am and 1:15pm-1:45pm.

Symposium Bingo

Keep your eye out for opportunities to fill out your symposium bingo card, located on the back cover of this Program Booklet. Fill out the box appropriately (i.e., respond to prompts) and check off boxes that you complete. To complete a "Bingo," check off four boxes to create a line. Note: Your line can only include ONE yellow box. At the end of the day, show your completed Bingo Card to the WiE Staff at the Check-In Desk to receive a prize.

Name Badge Stickers

Find a friend, and swap a sticker! Your name badge contains a unique set of stickers. As you meet people throughout the day, we encourage you to find similarities between you and your peers. When you identify something that you have in common with another person, swap stickers with them and use it to decorate your name badge!

Where in the world are WiE?

Place one of your stickers on your hometown on the MAP located near the check-in desk. Let's see how big the Purdue WiE Program network is!

Registered participants that attend all sessions and are present at the Networking Reception will be eligible to win one of five (5) \$1000 door prizes!

SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

AGENDA

9:00 AM: Sign-in opens (Outside STEW 302)

9:30 AM - 10:15 AM: Opening Plenary featuring Dr. Bich-Van Pham (STEW 302)

Associate Director of R&D Breakthrough Innovation for Prepared Foods, Tyson, Chicago IL
Ph.D. Chemical Engineering, Purdue University
B.S. Chemical Engineering, Northwestern University

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

10:30 AM - 11:30 AM: Session 1 - College of Engineering Graduate Student Presentations

Room 1: Traditional Talks (STEW 214A)

Alumna Speaker: Dr. Velvet Basemera-Fitzpatrick, Moderator: Burla Ondes

Deep Learning Cardiac Segmentation of Dual Ultrasound and Photoacoustic Image Data
Katherine Leyba, Biomedical Engineering

Deep learning driven adaptive optics for single molecule localization microscopy
Peiyi Zhang, Biomedical Engineering

Physics Informed Neural Networks to reduce uncertainty in experimental measurements
Shanmukhi Sripada, Mechanical Engineering

Crop residue estimation using SAR
Lena Azimi, Civil Engineering

Surviving the Unexpected - Designing and Implementing Safety Controls with Resilience
Power

Rashi Jain, Aeronautics and Astronautics Engineering

Session 1 Continued on the Next Page

SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

AGENDA

Room 2: Traditional Talks (STEW 214B)

Alumna Speaker: Dr. Jessica Sargent-Brown, Moderator: Anne Serban

Blast Effects on Steel-Plate Composite (SC) Structures: Design for Direct Shear

Margaret Perlman, Civil Engineering

Optimal digital design of flexible modular mini-plants for distributed drug manufacturing

Ilke Akturk, Chemical Engineering

A Holistic Approach for the Model-based Control of Crystal Size and Purity in Integrated Continuous

Crystallization-Wet Milling-Classification Systems

Rojan Parvaresh, Chemical Engineering

Viability of Focused Ion Beam Milling to Machine Crystalline Explosives

Kerry-Ann Stirrup, Materials Engineering

Process Intensification of Energetics Crystallization via model-free Quality-by-Control Direct Design Approaches

Montgomery Smith, Chemical Engineering

Room 3: Popular Press (STEW 214 C/D)

Alumna Speaker: Dr. Karen Son, Moderator: Elizabeth Sanders

Utilizing Transdisciplinary Project-Based Learning in Undergraduate Engineering Education

Lacey Davis, Aeronautics and Astronautics Engineering

Sensing and Memory via Engineered Materials

Katie Riley, Mechanical Engineering

Solution Processed $\text{Ag}_2\text{ZnSnSe}_4$ for Scalable Solar Panel Manufacturing

Anna Murray, Materials Engineering

Criteria Development to Assess Pack-out Corrosion Effects in Steel Built-up Members

Myriam Sarment, Civil Engineering

Thermocouple-Based Anomaly Detection in Fused Filament Fabrication

Anna Keim, Mechanical Engineering

SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

AGENDA

11:30 AM - 11:45 AM: Transition & Break

11:45 AM - 1:30 PM: Lunch and Keynote Panel (STEW 302)

Dr. Velvet Basemera-Fitzpatrick, Panelist

Senior Program Officer, National Academies of Sciences, Engineering, and Medicine

Ph.D. Engineering Education, Purdue University

M.S. Civil Engineering, Purdue University

Dr. Molly Goldstein, Panelist

Teaching Assistant Professor & Product Design Manager, Industrial and Enterprise

Systems Engineering, University of Illinois Urbana-Champaign

Ph.D. Engineering Education, Purdue University

M.S. Entrepreneurial Engineering, University of Illinois Urbana-Champaign

B.S. General Engineering, University of Illinois Urbana-Champaign

Dr. Jessica Sargent-Brown, Panelist

Research Engineer, Cook Advanced Technologies

Ph.D. Materials Engineering, Purdue University

M.S. Chemical Engineering, Purdue University

B.S. Polymer & Fiber Engineering, Auburn University

Dr. Karen Son, Panelist

Thermal Analyst, Sandia National Laboratories

Ph.D. Mechanical Engineering, Purdue University

M.S. Mechanical Engineering, Purdue University

Dr. Fengqing Maggie Zhu, Panelist

Associate Professor, Elmore Family School of Electrical & Computer Engineering,

Purdue University

Ph.D. Electrical & Computer Engineering, Purdue University

M.S. Electrical & Computer Engineering, Purdue University

1:30 PM - 1:45PM: Transition & Break

SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

AGENDA

1:45 PM - 2:45 PM: Session 2 - College of Engineering Graduate Student Presentations

Room 1: Traditional Talks (STEW 214A)

Alumna Speaker: Dr. Molly Goldstein, Moderator: Burla Ondes

Representing Multiple in vitro Tuberculosis Infection Models with a Single in silico Agent-Based Model

Alexa Petrucciani, Biomedical Engineering

Characterizing tuberculosis granuloma dynamics using computational modeling

Alexis Hoerter, Biomedical Engineering

An Optimization Framework for Distributed Manufacturing of Electrified Chemical Processes

Asha Ramanujam, Chemical Engineering

A Brief Introduction to Multiobjective Simulation Optimization Problems

Burla Ondes, Industrial Engineering

Room 2: Traditional Talks (STEW 214B)

Alumna Speaker: Dr. Bich Van C. Pham, Moderator: Elizabeth Sanders

Dominant scattering mechanisms in InSbAs quantum wells

Sara Metti, Electrical and Computer Engineering

Atomistic view of metallic systems

Victoria Tucker, Materials Engineering

First-Principles Analysis of the Ammonia Decomposition Reaction on High Entropy Alloy Catalysts

Zuhal Cakir, Chemical Engineering

Controlling Quantum Emitter Performance In Nanophotonic Cavities For On-Chip Cavity QED

Haimabati Dey, Electrical and Computer Engineering

Room 3: Pecha Kucha (STEW 214 C/D)

Alumna Speaker: Dr. Jessica Sargent-Brown, Moderator: Olivia Brandt

Human Factors Research at the Mars Desert Research Station

Arly Black, Aeronautics and Astronautics Engineering

Cislunar Space Surveillance

Surabhi Bhadauria, Aeronautics and Astronautics Engineering

Enhancing Thermal Conduction in Polymers

Angie Daniela Rojas Cardenas, Materials Engineering

Session 2 Continued on the Next Page

SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

AGENDA

Adhesion of Recycled Carbon Fiber Reinforced Composites to Aluminum

Nicole Balog, Materials Engineering

Analysis of Contaminants on Ground Glass Pozzolan and the Effects on Pozzolan
Performance in Mortar

Nicole Franklin, Materials Engineering

2:45 PM - 3:00 PM: Transition & Break

2:45 PM - 3:00 PM: Poster Set-up (STEW 306)

3:00 PM - 4:00 PM: Session 3 - College of Engineering Graduate Student Presentations

Room 1: Traditional Talks (ROOM 214A)

Alumna Speaker: Dr. Bich Van C. Pham, Moderator: Olivia Brandt

Roll-to-Roll Manufactured MoS₂-Carbon Nanotube Sensors for Selective Detection of Acetone

Ya-Ching Yu, Materials Engineering

High Throughput Platform for Understanding Macromolecular Interactions with Collagen and Hyaluronan

Paulina Babiak, Chemical Engineering

Characterization of composite hydrogel-Portland cement hydration products

Caitlin Adams, Materials Engineering

Steel Concrete Composite L-Joint Connection

Amanda Lefebvre, Civil Engineering

Room 2: Popular Press (STEW 214 C/D)

Alumna Speaker: Dr. Karen Son, Moderator: Anne Serban

Paper-based Lateral Flow Immunoassay for HPV Protein Detection

Lucy Tecle, Biomedical Engineering

Enzymatically Signal Enhanced Lateral Flow Assay Test for HIV using p24

Pankti Thakkar, Biomedical Engineering

Introducing Fundamental Quantum concepts to K-12 Students and Teachers

Zeynep G Akdemir, Engineering Education

Liquid flux assisted growth mechanism for the chalcogenide perovskite - BaZrS₃

Kiruba Catherine Vincent, Chemical Engineering

Session 3 Continued on the Next Page

SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

AGENDA

Room 3: Workshop Roundtable (STEW 302)

Alumna Speakers: Dr. Velvet Basemera-Fitzpatrick & Dr. Molly Goldstein

Moderators: Burla Ondes & Elizabeth Sanders

Predicting Case-mix Resident Service Need in Nursing Homes

Shujin Jiang, Industrial Engineering

BBB-on-a-Chip: An in vitro Blood-Brain Barrier Model After Traumatic Brain Injury

Nikita Krishnan, Biomedical Engineering

Inclusivity and accessibility of Virtual Reality

Nuela Chidubem Enebechi, Industrial Engineering

An Analysis of Chemical Engineering Students' Self-Regulatory Beliefs and Processes in an Introductory Materials and Energy Balances Class

AraOluwa Adaramola, Chemical Engineering

Silicon Carbide MOSFET and the era of sustainable electrification

Rajni Sah, Electrical and Computer Engineering

Is Hydrogen-based Steel making - The Future?

Sindhu Meenakshi Panaiyappan, Industrial Engineering

Model-directed experiment to measure particle flow behavior

Kayli Henry, Materials Engineering

SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

AGENDA

4:00 PM - 6:00 PM: Poster Presentations & Networking Reception (STEW 306)

Moderator: Anne Serban

Extraterrestrial Habitat

Juliana Pereira, Civil Engineering

Transitions in the Workflow of a Psychiatric Unit During the COVID-19 Pandemic and Design Implications

Raquel Ruiz, Civil Engineering

Cortical Bone Microdamage and Modulation by Hydration Thereof

Mary Arnhart, Mechanical Engineering

Crack Growth in Human cortical Bone: In-Situ Loading with 3D imaging

Glynn Gallaway, Mechanical Engineering

Hydrogel porosity and mechanical property tuning for cell infiltration and osteointegration

Claudia Benito Alston, Biomedical Engineering

Multi Modal Drug Delivery Platform for Functional Restoration of Spinal Cord via White Matter Repair

Shiva Sharma, Biomedical Engineering

Development of Vision and Eye Care Devices in Soft Contact Lenses

Seul Ah Lee, Biomedical Engineering

Assessment of Innovative Repair Methods for Corroded Steel Girder Bridges Using House of Quality Matrix

Anna Tarasova, Civil Engineering

A computational framework of electrochemistry and mechanical degradation in Li ion battery NMC cathodes

Jiaxiu Han, Mechanical Engineering

Multiphase modeling of particle/air counter flow in a parallel plate fluidized bed heat exchanger

Krutika Appaswamy, Mechanical Engineering

SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

ALUMNAE SPEAKERS

Dr. Velvet Basemera-Fitzpatrick

Velvet Basemera-Fitzpatrick, Ph.D., PMP is in the business of innovation. She is interested in the use of private equity in facilitating new solutions, technologies, and enterprises in transport, and other infrastructure areas, in achieving a more sustainable and equitable future. Velvet is a Senior Program Officer at the National Academies of Sciences, Engineering, and Medicine in Washington, D.C. She credits WiE Program for her leadership growth throughout her education at Purdue and graduated MSCE '09 and PhE ENE '14.



Dr. Molly H. Goldstein

Dr. Molly H. Goldstein is a Teaching Assistant Professor and Product Design Lab Director in Industrial and Enterprise Systems Engineering at the Grainger College at the University of Illinois. Dr. Goldstein earned her Ph.D. in Engineering Education at Purdue University in 2018. During this time, she was awarded the College of Engineering Outstanding Research Award and was a Bilsland Fellow. Dr. Goldstein's research focuses on student designer trade-off decisions through the study of their design actions and thinking. Her studies often involve educational and professional contexts with cross-disciplinary collaborations. She has a B.S. in General Engineering (Systems Engineering & Design) and M.S. in Systems and Entrepreneurial Engineering, both from the University of Illinois, Urbana-Champaign. Prior to pursuing her Ph.D., she worked as an environmental engineer specializing in air quality, influencing her focus in engineering design with environmental concerns.



SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

ALUMNAE SPEAKERS

Dr. Bich Van C. Pham

Bich-Van currently is the Associate Director of R&D Breakthrough Innovation for Prepared Foods at Tyson, leading a team to deliver new fully cooked products quickly to market. She has extensive experience in the consumer packaged goods (CPG) industry spanning discovery, product innovation, commercialization, packaging, and project management thru her 13 years at PepsiCo in both food and beverage products and now Tyson. She has also worked at a national lab and small business in addition to large billion-dollar companies. Bich-Van received her Ph.D. in Chemical Engineering from Purdue and her B.S. in Chemical Engineering from Northwestern University. While at Purdue, she was an active member of WiE Program and was a part of the Graduate Mentor Program leadership team. She continues to be an advocate for DE&I and for STEM, leading in SWE, PepsiCo's Women's Inclusion Network, and beyond. Bich-Van has 2 kids, a 6 year old daughter, and 4 year old son. 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).



Dr. 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. While at Purdue, she worked for 3 years as a graduate research assistant for WiE Program's Pre-College Outreach program. Upon graduation in 2020, she went to work in electronic warfare for the Naval Surface Warfare Center, Crane Division. In early 2022 she had the opportunity to return to West Lafayette and join Cook Advanced Technologies, where she works as a research engineer focused on early-stage medical device development. She and her husband currently spend most of their free time remodeling their home and raising backyard chickens.



SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

ALUMNAE SPEAKERS

Dr. Karen Son

Dr. Karen N. Son is a thermal analyst at Sandia National Laboratories. Karen specializes in modeling fire environments and designing experiments to validate stylized and reduced fidelity models. Prior to joining Sandia in 2018, Karen was a NASA Space Technology Research Fellow at Purdue University where she earned a Ph.D. in Mechanical Engineering under the advisement of Dr. Suresh Garimella. Her dissertation research focused on characterizing transport phenomena in sorbent beds as part of a collaboration with NASA to develop carbon dioxide removal systems for advanced space exploration. Karen enjoys spending time outside and volunteering with Albuquerque Mountain Rescue.



Dr. Fengqing Maggie Zhu

Fengqing Maggie Zhu is an Associate Professor of the Elmore Family School of Electrical and Computer Engineering at Purdue University, West Lafayette, Indiana. Dr. Zhu received the B.S.E.E. (with highest distinction), M.S. and Ph.D. degrees in Electrical and Computer Engineering from Purdue University in 2004, 2006 and 2011, respectively. Her research interests include image processing, computer vision, video compression and digital health. Prior to joining Purdue in 2015, she was a Staff Researcher at Futurewei Technologies, where she received a Certification of Recognition for Core Technology Contribution in 2012. She is the recipient of an NSF CISE Research Initiation Initiative (CRII) award in 2017, a Google Faculty Research Award in 2019, and an ESI and trainee poster award for the NIH Precision Nutrition workshop in 2021. Dr. Zhu is a senior member of the IEEE.



SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

ABOUT THE WOMEN IN ENGINEERING PROGRAM (WIE PROGRAM)

History

Established in 1969, the Purdue Women in Engineering Program (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.



Women in Engineering Program

SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023

ABOUT THE GRADUATE WOMEN IN ENGINEERING NETWORK (GWEN)

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.

Thank you to WiE Program Associate Director Dr. Suzanne Zurn-Birkhimer, WiE Program Admin Assistant Cathy Deno, and the 2022-2023 GWEN Leadership Team Anne Serban, Burla Ondes, Elizabeth Sanders, and Olivia Brandt for organizing this event!



SHARING YOUR VOICE, EXTENDING YOUR REACH

FEBRUARY 7, 2023



**Sandia
National
Laboratories**

Thank you to Sandia National Labs for their support to make this event possible!

SYMPOSIUM BINGO

* You must complete one row of four boxes containing only one of the gold squares to win the prize!

Attend two non-traditional talks: 1. _____ 2. _____	Write one question you have for the the keynote speaker: 	Share a photo on social media/LinkedIn with #GWENSymposium. 	View three posters outside of your discipline: 1. _____ 2. _____ 3. _____
Write the name of someone you share research interests with: _____	Network 1:1 with an alumna. 	Attend three presentations outside of your discipline: 1. _____ 2. _____ 3. _____	Ask an alumna a question during one of the Sessions.
Follow 3 new people on LinkedIn. 	View three posters outside of your discipline: 1. _____ 2. _____ 3. _____	Find someone with the same undergraduate degree as you. 	Attend two non-traditional talks: 1. _____ 2. _____
Attend three presentations outside of your discipline: 1. _____ 2. _____ 3. _____	Attend two non-traditional talks: 1. _____ 2. _____	Write one new research question you have: 	Take a professional head shot.



PURDUE
UNIVERSITY®

Women in Engineering Program

Women in Engineering Program

Dudley Hall, Room 2516

363 N Grant Street

West Lafayette, IN 47907

West Lafayette, IN 47907-2045

wiep@purdue.edu

www.purdue.edu/wiep