

Maura Sepesy, PhD

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EDUCATION

Doctor of Philosophy in Chemical Engineering August 2023
Case Western Reserve University (CWRU) Cleveland, OH
GPA: 4.0/4.0
Thesis: Aminated Membrane Adsorbers in Pursuit of Radiopharmaceutical Separation.

Bachelor of Science in Chemical Engineering, Minor in Applied Statistics May 2017
Rochester Institute of Technology (RIT) Rochester, NY
GPA: 3.52/4.00
Designations: Cum Laude, RIT Achievement Scholarship, Dean's List

PROFESSIONAL HONORS AND AWARDS

UB New Faculty Academy Fellow	2024
CWRU Chemical & Biomolecular Engineering Graduate Student Teaching Award	2023
Ohio Public Interest Fellowship	2022
NAMS Elias Klein Travel Supplement	2022
CWRU School of Graduate Studies Travel Award to attend NAMS 2021	2021
AIChE Beer Brewing Competition Best Poster Presentation	2021
CWRU Chemical & Biomolecular Engineering Graduate Student Service Award	2020
Poster Award at American Filtration Society Meeting	2019
Poster Award (Honorable Mention) at CWRU Research ShowCASE	2019

REFEREED PUBLICATIONS

Sepesy, MR and Banik, T; Scott, J; Venturina, LAF; Johnson, A; Schneider, BL; Sibley, MM; Duval, CE. "Chemically Stable Styrenic Electrospun Membranes with Tailorable Surface Chemistry" *Membranes*. (October 2023). DOI: 10.3390/membranes13110870

Sepesy, MR; Fugate, B; Duval, CE. "Amine-functionalized membrane adsorbers to purify copper from acidic solutions." *ACS Applied Polymer Materials*. (January 2022). DOI: 10.1021/acsapm.1c01512

Hostert, **Sepesy**, Duval and Renner "Clickable polymer scaffolds enable cerium recovery with peptide ligands." *Soft Matter*. (March 2023). DOI: 10.1039/D2SM01664H

PUBLICATIONS IN PREPARATION

Sepesy and Duval. "A beginner's guide to membrane adsorbers." *In preparation for Frontiers in Chemical Engineering*.

POSTERS AND PRESENTATIONS

1. **Sepesy, MR**. "Making Learning Fun: A Student-Centered Learning Approach" Oral Presentation at *New Faculty Academy Showcase*, Buffalo, NY May 2024
2. **Sepesy, MR**; Duval, CE. "Upstream radiopharmaceutical purification: purifying metals in strong acids." Poster Presentation at *North American Membrane Society*, Tuscaloosa, AL, May 2023
3. **Sepesy, MR**; Fugate, B; Che, A; Duval, CE. "Membrane Adsorbers to Capture Cu from Mixed Metal Acidic Solutions in Support of Radiopharmaceuticals" Oral Presentation at *American Institute of Chemical Engineers National Meeting*, Phoenix, AZ, November 2022.

4. **Sepesy, MR.** “Advanced Membrane Separations as a Teaching-Focused Faculty Member” Poster Presentation at *American Institute of Chemical Engineers National Meeting*, Phoenix, Az, November 2022.
5. **Hostert, J. D.;** Sepesy, M.; Duval, C. E.; Renner, J. N., “Rare Earth Element Recovery Is Only a ‘Click’ Away: Recovering Lanthanides with Peptide-Functionalized Polyvinylidene (PVDF) Membranes.” *American Institute of Chemical Engineers National Meeting*, Phoenix, Az, November 2022.
6. **Sepesy, MR;** Fugate, B; Johnson, A; Duval, CE. “Adsorption of Cu from Acidic Solutions in Support of Theranostics.” Poster Presentation at *North American Membrane Society*, Tempe, Az, May 2022
7. **Sepesy, MR;** Fugate, B; Duval, CE. “Cu-selective membrane adsorbers for medical isotope production” Oral Presentation at *American Institute of Chemical Engineers National Meeting*, Boston, MA, October 2021.
8. **Sepesy, MR;** Issa, M; Yu H; Hostert, J. “The Brew Crew: Spooky beers for chemical engineers” Poster Presentation at *American Institute of Chemical Engineers National Meeting Brewing Competition*, Boston, MA, October 2021. ****Award winner**
9. **Sepesy, MR;** Fugate, B; Johnson, A; Duval, CE. “Radiopharmaceutical Separation Using Membrane Adsorbers.” Poster Presentation at *North American Membrane Society*, Estes Park, CO August 28 2021.
10. **Sepesy, MR;** Fugate, B; Pataroque, K; Duval, CE. “Membrane-Based Purification of Cu-67 for use in Theranostics” Oral Presentation at *American Institute of Chemical Engineers (AIChE) Fall Conference*, San Francisco, CA, May 2020. Online due to COVID-19
11. **Sepesy, MR;** Fugate, B; Duval, CE. “Membrane adsorbers for medical isotope production.” Poster Presentation at *North American Membrane Society Meeting*, Online due to COVID-19, May 2020.
12. **Sepesy, MR;** Duval, CE. “Membrane separation of Cu-67.” Poster Presentation at *American Filtration Society Meeting*, Cleveland OH, September 2019. ****Award winner**
13. **Sepesy, MR;** Fugate, B; Duval, CE. “Membrane-based purification of Cu-67 for use in theranostics.” Poster Presentation at *Research ShowCASE*, Cleveland OH, April 2019. ****Honorable mention**

TEACHING EXPERIENCE

University at Buffalo (UB)

Assistant Professor of Teaching

Fall 2023 – present

- CE 212 – Fundamentals of Chemical Engineering
- CE 317 – Transport Process I
- CE 327 – Chemical Engineering Lab I
- CE 328 – Chemical Engineering Lab II
- CE 405 – Coffee, Tea, and Cannabis Science
- CE 411 – Beer, Wine, and Spirits
- CE 496 – internship/Practicum
- CE 498 – Undergraduate Research
- Guest Lecturer
 - CE341 – Applied CE Math
 - CE427 – Chemical Engineering Laboratory III

New Faculty Academy

New Faculty Academy Fellow

2023 – 2024

In collaboration with the University Libraries and the Office of Curriculum, Assessment and Teaching Transformation (CATT), the Office of the Vice Provost for Faculty Affairs designed a focused, two-track curriculum for a select cohort of 15-25 recently-hired faculty to enter into a New Faculty Academy for Teaching.

Teaching Mentorship

Teaching mentee

Fall 2022

- ECHE 260 - Introduction to Chemical Systems
- Developed two modules on chemical engineering concepts (lectures and homework problems)
- Expanded course to include Excel basics with homework sets
- Engaged in weekly journal club studying papers focused on inclusive teaching, active learning, and backwards design
- Delivered course content to 50 sophomore-level chemical engineering students using active learning techniques

CWRU Department of Chemical Engineering

Guest lecturer

Fall 2019 & 2021

- ECHE 362 - Chemical Engineering Laboratory
 - Guest lectured two years, once as a TA, and the other the following year after successful first lecture
 - Taught advanced Excel techniques and other tips for chemical engineering needs using Excel
 - Data Tables, Solver, Goal Seek, Vlookup, and introduced VBA
- ECHE 260 - Introduction to Chemical Systems
 - Guest lectured once, after TA semester
 - Taught basic Excel techniques
 - Organizing Excel sheet, making graphs and tables, Goal Seek, and Solver

Teaching assistant

Fall semester 2018, 2019, & 2022

- ECHE 260 - Introduction to Chemical Systems
 - Held office hours, graded homework, and held recitations for the first chemical engineering class the students take.
 - Topics covered: understanding units and process variables, material balances for non-reactive and reactive processes, equations of state and single phase systems, materials balance for multi-phase systems, energy balances for non-reactive and reactive systems, and combines mass and energy balances
- ECHE 362 - Chemical Engineering Laboratory
 - Held office hours, reviewed laboratory work proposal, and oversaw laboratory work for gas membrane systems.
 - Topics covered: gas membrane system: laboratory safety, creating efficient Excel sheets, writing a well thought out experimental plan, and executing proposed plan within time and resource constraints.
- ECHE 360 - Transport Phenomena for Chemical Systems
 - Held office hours, attended lectures, and taught a lecture and two recitations.

- Topics covered: fluid flow, heat, and mass transfer; applications to chemical engineering systems (steady-state and transient); convective and molecular transport; design of unit operations; and vector/tensor and dimensional analysis.

Future Faculty Certificate Program

Fall semester 2018

Participant

- ECHE 401C; learned effective teaching strategies with focus on in-person classroom and laboratory settings
- Topics covered: Developing student-centered curriculum, creating effective course and assignment design, creating a welcoming, inclusive, and motivating classroom environment, leading engaging lectures and classroom discussions, and providing meaningful assessments of student work.

RIT Department of Chemical Engineering

Teaching assistant

Spring semester 2017

- CHME 301 - Analytical Techniques for Chemical Engineering I
- Held office hours, graded homework, provided feedback on VBA coding, and provided guidance for implementing mathematical procedures in Excel
- Topics covered: roots of equations, fitting equations to data, solution of systems of algebraic equations, interpolation, optimization, numerical differentiation and integrations, and numerical solutions to ordinary differential equations.

RIT Year One Program

Peer advisor

Fall semester 2016

- Help first year college students adjust and navigate college life
- Serve as a teaching aid for the administrator of the class
 - Taught and created lessons plans; led class discussions

TRIO Student Success

Tutor

2013 - 2014

- TRIO offered tutoring services to students who were low-income, first-generation college students, or individuals with disabilities.
- Tutored students (2-5) in subjects such as calculus, statistics and chemistry

OUTREACH

ChemE Camp

Annually, 2024 – present

Organizer and activity leader

A day camp for about 20 high school juniors and seniors to expose them to chemical engineering

High School Outreach

Organizer and activity leader

2024 – present

Work with local high school science teachers to teach students about chemical engineering and UB

- Bio plastics
 - Scientific concept: polymerization, scale-up, and product development
 - Activity: create bioplastics out of potato starch, observe different processing times due to surface area, discuss challenges with scaling up the process

UB Open House

Faculty volunteer

2023 – present

Discuss and answer any questions about CBE with perspective students and guardians,

Engineering Carnival at CWRU (ages 5 - 14)

Activity Leader

Annually, 2019 – 2023

Each year, I worked collaboratively with other graduate students to design and deploy new activities, like:

- Candy membrane
 - Scientific concept: size exclusion, membrane filtration
 - Activity: Students arrange cardboard sieves in different orders to filter a mixture of candy with different sizes (yes, they kept the candy)
- Unbelievable ooze
 - Scientific concept: states of matter, complex fluids
 - Activity: Mix corn starch and water to make a non-Newtonian fluid and observe its flow properties and response to shear force
- Science is RAD
 - Scientific concept: radiation and shielding
 - Activity: Using Geiger counter, students explored how shielding and distance affect radiation dose; with a cloud chamber, students were able to visually identify types of radiation; and ultimately students learned about radiation in everyday life
- Can you help me find my [Pu]ppy?
 - Scientific concept: nuclear forensics, radiation, shielding, radiation detection
 - Activity: An interactive virtual presentation where students learned about different types of radiation detectors, identifying a radioactive source, how shielding affects radiation detection, and other basics of nuclear forensics

Girl Scouts of NE Ohio “Get to Know Nuclear” (ages 8 - 14)

Organizer and Activity Leader

Annually, 2020 – 2023

- Scientific concept: modeling radioactive and stable atoms, half-lives, chain reactions, controlling nuclear reactors, calculating radiation dose, detecting radiation
- Activities:
 - Building atoms and decay particles as a physical aid to understand fission
 - M&M half-life used to plot radioactive decay
 - Balloon reactor helped understand how chain reactions start and role of control rods in nuclear reactors
 - Using bananas worth of radiation to understand that radiation is not always scary
 - Cloud chamber activity where Girl Scouts visualize and identify different types of radiation
- Organizer:
 - Created, planned, and executed a daylong seminar following the American Nuclear Society guidelines.
 - Met with CWRU Leonard Gelfand STEM Center to plan and prepare having minors on campus.
 - Worked with Girl Scouts of Northeast Ohio to get approval for hosting and advertise event.
 - Create scheduled events, organize and train volunteers, and obtain supplies for day of activities.

Sciencepalooza (ages 14 - 19)

Activity Leader

November 2020

- Having fun with nuclear science!
 - Scientific concepts: radiation, shielding, and dose calculations
 - Activities: An interactive virtual presentation with a hand out available via a QR code; learned structure of atoms, how radioactive decay occurs, the difference between ionizing and non-ionizing radiation, and types of shielding.

CWRU COVID-19 Vaccine Clinic

Volunteer

March 2021

- Helped queue up and lead those getting vaccines to the correct station and let the vaccinated know when their 15 minutes were finished.

LEADERSHIP AND PROFESSIONAL SERVICE

University at Buffalo

Member of Chemical and Biological Engineering Undergraduate Committee

2023 – present

Member of UB CBE DAB Pre-College Outreach Committee

2023 – present

Member of ABET SO5 Taskforce

2024

CWRU Chemical Engineering Graduate Student Organization (ChEGSO)

Women of ChEGSO Liaison, elected position

2021 – 2022

- Created events to bring gender minorities within ChEGSO together
- Brainstormed and enacted ways for ChEGSO to be more inclusive

President, elected position

2020 – 2021

- Planned, organized, and delegated tasks to host events to bring together chemical engineering graduate students both professionally and socially
 - Pivoted to keep graduate students and professors engaged virtually during the beginning of the pandemic
- Lead a team of 5 other graduate student officers
- Created space for gender minorities in ChEGSO by creating and appointing the Women of ChEGSO liaison within my term as president

CWRU Engineering Graduate Government (EGG)

Chemical Engineering Department Representative

2020 – 2021

- Represented the Chemical and Biomolecular Engineering Department in EGG meetings
- Polled and connected with chemical engineering graduate students to understand their opinions and best represent them in meetings
- Created, planned, and hosted event both in person and then virtual for the engineering school to keep students engaged with other programs before and during pandemic

CWRU Graduate Student Council (GSC)

Engineering School Representative

2020 – 2021

- Represented the School of Engineering in GSC meetings
- Polled and connected with all engineering graduate students to understand their opinions and best represent them in meetings
- Attended GSC meeting and voted on budget allocation, public transportation agreements for the graduate school, and other topics that arose during the academic year.

CWRU SOURCE Undergraduate Research Office

Reviewer for undergraduate summer fellowship proposals 2020 - present

- Reviewed, rated, and provided constructive feedback for SOURCE research proposals

RIT Center for Residence Life

Senior Resident Advisor 2016 - 2017

- In addition to other RA duties, lead a team of 8 RAs to create building-wide activities
- Worked with a team of other Senior RAs to create residence wide activities and outreach programs

Resident Advisor 2013 - 2016

- Responsible for a co-ed floor of students' adjustment to life at RIT
 - Develop and market programs
 - Manage a budget to host events
 - Supervise residents
 - Promote a healthy living and learning community
 - Help find and mediate solutions when problems arise within the community

Women in Engineering (WE @ RIT)

Member 2012 - 2017

- Hosted high school senior girls in an overnight event to encourage them to explore their interests in engineering

Alumni Relations

Student Alumni Ambassador 2016 - 2017

- Planned, organized, and executed events to bring alumni back to campus and to stay engaged with RIT

American Institute of Chemical Engineers (AIChE)

Head of ChemE Car, elected position 2016 - 2017

- Worked with three ChemE Car teams to create experimental plans to improve their cars design
 - These are shoebox-sized "cars" that run and stop based on chemical reactions
 - Day of the competition teams are told how far cars will have to go and stop
- Allocated funds and managed project lab ChemE Car teams used to work on their projects
- Created and presented outreach booth during Imagine RIT to showcase the cars teams had been working on

PROFESSIONAL SOCIETIES

American Institute of Chemical Engineers (AIChE)

Member 2012 - present

North American Membrane Society (NAMS)

Member 2020 - present

American Society for Engineering Education, Educational Research and Methods Division

Member 2022 - present

National Science Policy Network

Member 2022 - present

ENGINEERING EXPERIENCE

Ohio Environmental Protection Agency

May 2022 - August 2022

Ohio Public Interest Fellow, Office of Compliance and Pollution Prevention, Division of Environmental and Financial Assistance

- Work with Solid Waste Management Districts to help improve their Recycle Right programs
 - Created survey to better understand where improvements were needed in Ohio EPA outreach
- Created a Pollution Prevention (P2) Tool Kit for National Emphasis Areas (NEA)
 - Organize and summarize P2 practices of NEAs who previously received an Encouraging Environmental Excellence (E3) Award
 - Contact and perform site visits with E3 awardees to work with them to continue their environmental stewardship
- Planned and prepared for virtual conferences

Lubrizol Advanced Materials

January 2018 - August 2018

Laboratory Assistant

- Created, processed, and tested membranes using new and innovative materials
- Optimized the process time for membrane production
- Worked with multidisciplinary teams to explore the qualities of the membranes

Graphenix Development Inc

January 2016 - May 2016

Research Co-op

- Gained experience in the start-up and maintenance of a start-up business
- Researched how different carbon formulations affect the performance of a supercapacitor
 - Created and coated supercapacitor electrodes
 - Applied statistical test methods to analyze the data
 - Ran testing to characterize the durability of the supercapacitors

Honda R&D Americas

June 2014 - January 2015

Advance Materials Research Co-op

May 2015 - July 2015

- Showed a correlation between natural and laboratory weathering using ASTM D7869 and SAE J2527
- Researched how changing temperature, oil, and the materials of a piston's liner and ring can affect the physical properties of an engine
- Researched how different adhesive formulations and metals affect the samples performance
 - Identified how different adhesives and pre-strains can affect the strength of a peel
- Developed a new analytical method that measures the time it takes for samples to acquire red rust and for corrosion growth to occur in market
 - Weathered samples with different coatings and pre-treatments on various metal