HEE JEUNG OH

The Pennsylvania State University
213 Chemical and Biomedical Engineering Building
University Park, PA 16802

hjoh@psu.edu
(814) 863-9085
www.theohlab.com

Research Program

I study the relationship between polymer chemistry, processing, structure, and transport properties for separation science. Specifically, I explore the influence of a polymer's chemical and physical structures on transport properties such as sorption, diffusion, permeation, and conduction of small molecules in polymers and polymer-based materials. These fundamental studies are critical for designing polymers for liquid, gas and vapor separations, energy storage, selective removal of unwanted molecules from various chemical streams, critical and precious element recovery, biomedical devices, controlled drug-delivery, and barrier materials for food and packaging.

Academic Appointments

Pennsylvania State University

Assistant Professor, Department of Materials Science and Engineering (courtesy)	2022 – present
Assistant Professor, Department of Chemical Engineering	2020 – present
Faculty, Institute of Energy and Environment (IEE)	2020 – present
Graduate Faculty, Additive Manufacturing and Design (AMD)	2020 – present

Education

Postdoc	**The University of California, Berkeley** Chemical and Biomolecular Engineering Advisor: Prof. Nitash P. Balsara	2019
Ph.D.	**The University of Texas at Austin** Chemical Engineering Advisors: Prof. Benny D. Freeman and Prof. Donald R. Paul Dissertation: "Sulfonated Polysulfone Desalination Membranes by Solvent-Free Melt Extrusion"	2015
B.S.	**Korea Advanced Institute of Science and Technology (KAIST)** Chemical Engineering, *Summa cum laude*	2008

Honors and Awards

National Academy of Engineering (NAE)'s Grainger Foundation Frontiers of Engineering (FOE) Grant	2023
American Chemical Society (ACS) Petroleum Research Fund (PRF) Doctoral New Investigator (DNI) Grant	2022
Invited to the National Academy of Engineering (NAE)'s Grainger Foundation Frontiers of Engineering (FOE) Symposium	2022
Hanwha Non-Tenured Faculty Award	2022
3M Non-Tenured Faculty Award	2021
APS March Meeting Press Conference ("Beating Cancer with Better Chemo," March 18, 2021)	2021
Young Membrane Scientist Award (North American Membrane Society (NAMS))	2020
ACS Central Science Embargoed Press Release (BBC News) and Journal Cover Article	2019
ACS Editor's Choice Article (ACS Macro Letters, 2016, 5(8), 936-941)	2016
The University of Texas at Austin Professional Development Award	2013
Doh Wonsuk Memorial Award from the Korean Institute of Chemical Engineers (KIChE)	2012
Korean-American Scientists and Engineers Association (KSEA) Poster Award – First Prize	2012
Full Scholarship for Eight out of Eight Semesters from the Korean Government	2004 – 2007
KAIST Chemical and Biomolecular Engineering Laboratory Research Award – First Prize	2006
Korea Foundation for Advanced Studies Undergraduate Fellowship	2006 – 2007
Korea Research Foundation Scholarship	2004 – 2007
Samsung Total Cooperation Scholarship for Distinguished Undergraduates	2005
KAIST Undergraduate Research Program Awardee	2006 – 2007
The 2nd National Pre-Star-Venture Business Start-Up Competition - Second place	2007
Korea IT International Cooperation Agency Training Camp in Silicon Valley – Invited to a business start-up camp as the winner of a national competition	2007

Past Research Experience

University of California, Berkeley, Department of Chemical Engineering 2015 – 2019
Postdoctoral Research Advisor: Prof. Nitash P. Balsara
Collaborators: Prof. Steve Hetts (UCSF), Prof. Joseph DeSimone (Carbon, Stanford University), and Prof. Robert Grubbs (Caltech)
Designed 3D printed polymer membranes for capturing ionic chemotherapeutics before they spread through the body to minimize toxic side effects during chemotherapy

University of Texas at Austin, Department of Chemical Engineering 2008 – 2015
Graduate Research Advisors: Prof. Benny D. Freeman and Prof. Donald R. Paul
Collaborators: Prof. James E. McGrath (Virginia Tech), and Prof. Eric Baer (Case Western Reserve University)
Designed and developed solvent-free, melt-processed, ion-exchange polymer membranes for water purification and desalination and investigated the water and ion transport properties in these materials

Advanced Hydro, Inc. 2009
Chemical engineering startup company spun off from a research project at UT Austin
Built a new laboratory, conducted pilot tests for commercialization of desalination membranes

Institute of Energy Research, Greenhouse Gas Reduction Center Summer 2007
Undergraduate Research Advisor: Dr. Junghoon Park
Studied the effect of supercritical water treatment on hydrocarbon compounds to reduce CO_2 generation

Korea Advanced Institute of Science and Technology (KAIST), Department of Industrial Design 2006 – 2007
Undergraduate Research Advisor: Prof. Kun Pyo Lee
Studied engineering design and human centered interaction design methods to develop future chemical and biological engineering products in a society ubiquitous with IT devices and filed a patent ($4,000 funding)

Peer-Reviewed Publications

(GOOGLE SCHOLAR PAGE)

16. K. Bell, S. Freeburne, M. Fromel, **H. J. Oh**, and C. W. Pester, "Heterogeneous photoredox catalysis using fluorescein polymer brush functionalized glass beads," Journal of Polymer Science, **2021**, 59, 2844-2853

15. W. S. Loo, G. K. Sethi, A. A. Teran, M. D. Galluzzo, J. A. Maslyn, **H. J. Oh**, K. I. Mongcopa, and N. P. Balsara, "Composition dependence of the Flory–Huggins interaction parameters of block copolymer electrolytes and the isotaksis point," Macromolecules, **2019**, 52, 5590-5601

14. C. Yee, D. McCoy, J. Yu, A. Losey, C. Jordan, C. Stillson, B. Kilbride, T. Moore, **H. J. Oh**, S. Roy, A. Patel, M. W. Wilson, and S. W. Hetts, "Endovascular ion exchange ChemoFilter device reduces off-target doxorubicin exposure in a hepatic intra-arterial chemotherapy model," Radiology: Imaging Cancer, **2019**, 1(1): 3190009

13. **H. J. Oh**, M. S. Aboian, M. Y. J. Yi, J. A. Maslyn, W. S. Loo, X. Jiang, D. Y. Parkinson, M. W. Wilson, T. Moore, C. R. Yee, G. R. Robbins, F. M. Barth, J. M. DeSimone, S. W. Hetts and N. P. Balsara, "3D printed absorber for capturing chemotherapy drugs before they spread through the body," ACS Central Science, **2019**, 5, 5, 419-427 **(Journal Cover Article and Featured in BBC News)**

12. J. A. Maslyn, W. S. Loo, K. D. McEntush, **H. J. Oh**, K. J. Harry, D. Y. Parkinson and N. P. Balsara, "Growth of lithium dendrites and globules through a solid block copolymer electrolyte as a function of current density," Journal of Physical Chemistry, Part C: Energy Conversion and Processes, **2018**, 122 (47), 26797-26804

11. W. S. Loo, M. D. Galluzzo, X. Li, J. A. Maslyn, **H. J. Oh**, K. I. Mongcopa, C. Zhu, A. A. Wang, X. Wang, B. Garetz and N. P. Balsara, "Phase behavior of mixtures of block copolymers and a lithium salt," Journal of Physical Chemistry, Part B, **2018**, 122 (33), 8065-8074

10. W. S. Loo, X. Jiang, J. A. Maslyn, **H. J. Oh**, C. Zhu, K. H. Dowing and N. P. Balsara, "Reentrant phase behavior and coexistence in asymmetric block copolymer electrolytes," Soft Matter, **2018**, 14, 2789-2795 **(Journal Back Cover Article)**

9. M. A. Aboian, J. F. Yu, A. Gautam, C-H Sze, J. K. Yang, J. Chan, P. Lilaney, C. D. Jordan, **H. J. Oh**, D. M. Wilson, A. S. Patel, M. W. Wilson and S. W. Hetts, "In vitro clearance of doxorubicin with a DNA-based filtration device designed for intravascular use with intra-arterial chemotherapy," Biomedical Microdevices, **2016**, 18:98

8. X. C. Chen, **H. J. Oh**, J. F. Yu, J. K. Yang, N. Petzetakis, A. S. Patel, S. W. Hetts and N. P. Balsara, "Block copolymer membranes for efficient capture of a chemotherapy drug," ACS Macro Letters, **2016**. 5(8), 936-941 **(ACS Editor's Choice Article)**

7. **H. J. Oh**, J. E. McGrath and D. R. Paul, "Water and salt transport properties of disulfonated poly(arylene ether sulfone) desalination membranes formed by solvent-free melt extrusion," Journal of Membrane Science, **2018**. 546, 234-245

6. **H. J. Oh**, J. E. McGrath and D. R. Paul, "Kinetics of poly(ethylene glycol) extraction into water from plasticized disulfonated poly(arylene ether sulfone) desalination membranes prepared by solvent-free melt processing," Journal of Membrane Science, **2017**, 524, 257-265

5. **H. J. Oh**, J. S. Park, S. Inceoglu, I. Villaluenga, J. L. Thelen, X. Jiang, J. E. McGrath and D. R. Paul, "Formation of disulfonated poly(arylene ether sulfone) thin film desalination membranes plasticized with poly(ethylene glycol) by solvent-free melt extrusion," Polymer, **2017**, 109, 106-114

4. **H. J. Oh**, B. D. Freeman, J. E. McGrath, C. J. Ellison, S. Mecham, K. S. Lee and D. R. Paul, "Rheological studies of disulfonated poly(arylene ether sulfone) plasticized with poly(ethylene glycol) for membrane formation," Polymer, **2014**. 55, 1574-1582

3. **H. J. Oh**, B. D. Freeman, J. E. McGrath, C. H. Lee and D. R. Paul, "Thermal analysis of disulfonated poly(arylene ether sulfone) plasticized with poly(ethylene glycol) for membrane formation," Polymer, **2014**. 55, 235-247

2. C. H. Lee, D. VanHouten, O. Lane, J. E. McGrath, J. Hou, L. A. Madsen, J. Spano, S. Wi, J. Cook, W. Xie, **H. J. Oh**, G. M. Geise and B. D. Freeman, "Disulfonated poly(arylene ether sulfone) random copolymer blends tuned for rapid water permeation via cation complexation with poly(ethylene glycol) oligomers," Chemistry of Materials, **2011**. 23(4), 1039-1049

1. **H. J. Oh**, J. M. Park and K. P. Lee, "UI (User Interface) in product design in chemical engineering and its future application in ubiquitous society with IT devices," The 19th International Symposium on Chemical Engineering Kyushu(Japan)-Daejeon/Chungnam(South Korea), Kitakyushu, Japan, **2006**

Patents

2. **H. J. Oh**, N. P. Balsara, M. A. Aboian, S. W. Hetts, G. R. Robbins and J. M. DeSimone, "3D printed scaffold for capturing toxins and releasing agents," Filed **2019**, International Publication No. WO/2019/213123 (pending)

1. **H. J. Oh**, "Ink Jet Pen," **2007**, South Korea Publication No. 10-0735890

Invited Talks and Award Presentations

38. **H. J. Oh,** the Women Scientists Global Webinar, the Korean-American Women in Science and Engineering, (KWiSE), August 22, 2023

37. **H. J. Oh,** Materials & Chemistry Institute (MaCl) Summer Program, Materials Science Division, Lawrence Livermore National Laboratory, July 6, 2023

36. **H. J. Oh**, Dow Inc., May 10, 2023

35. **H. J. Oh**, Fluid Transport in Nanomaterials for Sustainable Energy and Water Production Workshop, the 2023 National Synchrotron Light Source – II (NSLS-II), the Center for Functional Nanomaterials (CFN) and the Laboratory of BioMolecular Structure (LBMS) Users' Meeting, Brookhaven National Laboratory, April 26, 2023

34. **H. J. Oh**, Polymeric Membranes for Molecular and Ion Separations Symposium sponsored by the Division of Polymeric Materials Science and Engineering (PMSE), the American Chemical Society (ACS) National March Meeting, Indianapolis, IN, March 29, 2023

33. **H. J. Oh**, Young Investigator Symposium, Seoul National University, Seoul, South Korea, January 10, 2023

32. **H. J. Oh**, Transport Phenomena in Polymer Systems for the Division of Polymer (8A), the American Institute of Chemical Engineers (AIChE) Fall Meeting, Phoenix, AL, November 18, 2022

31. **H. J. Oh**, Emerging Junior Investigator Open Forum, the American Institute of Chemical Engineers (AIChE) Fall Meeting, Phoenix, AL, November 16, 2022

30. **H. J. Oh**, Guest Lecturer for the Taylor Lecture in honor of Michael Rubinstein, Department of Materials Science and Engineering at Penn State University, University Park, PA, April 21, 2022

29. **H. J. Oh**, E.V. Murphree Award in Industrial and Engineering Chemistry Symposium in honor of Joseph DeSimone, the American Chemical Society (ACS) National March Meeting, San Diego, CA, March 23, 2022

28. **H. J. Oh**, Future of Plastics, Materials Spotlight Series, Materials Research Institute (MRI) at Penn State University, January 27, 2022

27. **H. J. Oh**, Additive Manufacturing & Design Seminar Series, Penn State University, January 25, 2022

26. **H. J. Oh**, 3M Non-Tenured Faculty Award Symposium, November 5, 2021

25. **H. J. Oh**, Convergence: Medicine and Public Health, the North American Membrane Society (NAMS) Annual Meeting, Boulder, CO, September 1, 2021

24. **H. J. Oh**, Biodesign Center for Sustainable Macromolecular Materials and Manufacturing, Arizona State University, August 26, 2021

23. **H. J. Oh**, the American Physical Society (APS) March National Meeting Press Conference on "Beating Cancer with Better Chemo", March 18, 2021
22. **H. J. Oh**, Braskem Innovation & Technology, Pittsburgh, PA, September 9, 2020
21. **H. J. Oh**, Department of Radiology, Pennsylvania State University and Health Milton S. Hershey Medical Center, Hershey, PA, July 2, 2020
20. **H. J. Oh**, Young Membrane Scientist Award, the North American Membrane Society (NAMS) Annual Meeting, May 21, 2020
19. **H. J. Oh**, the Korean-American Scientists and Engineers Association, the Chapter of the Lawrence Berkeley National Laboratory, and the University of California at Berkeley, Berkeley, CA, November 1, 2019
18. **H. J. Oh**, Polymeric Materials for Water Purification Symposium sponsored by the Division of Polymer Chemistry Division (POLY) and Polymeric Materials Science and Engineering (PMSE) (Chairs: Nathaniel Lynd, Benny Freeman, and Rachel Segalman), the American Chemical Society (ACS) National Fall Meeting, San Diego, CA, August 28, 2019
17. **H. J. Oh**, Korean Life Scientists in the Bay Area (KOLIS) Seminar, the University of California at Berkeley, Berkeley, CA, July 19, 2019
16. **H. J. Oh**, Department of Chemical and Biomolecular Engineering, the Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea, June 5, 2019
15. **H. J. Oh**, Fuel Cell Research Center, the Korea Institute of Science and Technology (KIST), Seoul, South Korea, June 3, 2019
14. **H. J. Oh**, Biological Nanostructures Facility, Molecular Foundry, the Lawrence Berkeley National Laboratory, Berkeley, CA, May 6, 2019
13. **H. J. Oh**, Biology Research Information Center, the National Research Foundation of Korea, Seoul, South Korea, April 23, 2019
12. **H. J. Oh**, Department of Chemical and Biomolecular Engineering, University of Delaware, Newark, DE, February 3, 2019
11. **H. J. Oh**, Department of Chemical and Biological Engineering, University of Colorado, Boulder, Boulder, CO, January 28, 2019
10. **H. J. Oh**, Department of Chemical Engineering, Pennsylvania State University, State College, PA, January 24, 2019
9. **H. J. Oh**, Korean Life Scientists in the Bay Area (KOLIS) Spring Conference, University of California, San Francisco School of Medicine, CA, May 6, 2017
8. **H. J. Oh**, Department of Chemical Engineering, University of South Carolina, Columbia, SC, March 17, 2017
7. **H. J. Oh**, Department of Chemical Engineering, Texas Tech University, Lubbock, TX, March 6, 2017
6. **H. J. Oh**, Davidson School of Chemical Engineering, Purdue University, West Lafayette, IN, February 21, 2017
5. **H. J. Oh**, IBM Almaden Research Center, San Jose, CA, February 2, 2017
4. **H. J. Oh**, Department of Chemical and Biomolecular Engineering, University of California at Berkeley, Berkeley, CA, May 13, 2015
3. **H. J. Oh**, Department of Chemistry, University of North Carolina at Chapel Hill, Chapel Hill, NC, April 29, 2015
2. **H. J. Oh**, Department of Energy Engineering, Hanyang University, Seoul, South Korea, December 27, 2013
1. **H. J. Oh**, Environment & Resources Research Center, Korea Research Institute of Chemical Technology (KRICT), Daejeon, South Korea, December 26, 2013

Presentations

22. **H. J. Oh**, "3D printed adsorber for capturing chemotherapy drugs before they are spread through the body," Gordon Research Conference on Additive Manufacturing of Soft Materials, Ventura, CA. August 7-12, 2022 (Poster presentation)
21. **H. J. Oh**, "3D printed adsorber for capturing chemotherapy drugs before they are spread through the body," Gordon Research Conference on Membranes: Materials and Processes, New London, NH. July 31-August 5, 2022 (Poster presentation)
20. **H. J. Oh**, "3D printed adsorber for capturing chemotherapy drugs before they are spread through the body," Gordon Research Conference on Polymer Physics, South Hadley, MA. July 24-29, 2022 (Poster presentation)
19. **H. J. Oh**, "3D printed adsorber for capturing chemotherapy drugs before they are spread through the body," the North American Membrane Society (NAMS) Annual Meeting, Session: Emerging Materials of Liquid Separation, Phoenix, AZ, May 16, 2022 (Poster presentation)
18. **H. J. Oh**, "3D printed adsorber for capturing chemotherapy drugs before they are spread through the body," the American Physical Society (APS) March Meeting, Session: Transport Phenomena in Polymers and Polymer Membranes, Chicago, IL, March 15, 2022 (Oral presentation)

17. **H. J. Oh**, M. S. Aboian, M. W. Wilson, J. M. DeSimone, S. W. Hetts and N. P. Balsara, "3D printed adsorber for capturing chemotherapy drugs before they are spread through the body," the American Physical Society (APS) March Meeting, Session: Physics and Chemistry of Polymer 3D Printing, March 15, 2021 (Oral presentation)

16. **H. J. Oh**, M. S. Aboian, M. W. Wilson, J. M. DeSimone, S. W. Hetts and N. P. Balsara, "3D printed adsorber for capturing chemotherapy drugs before they are spread through the body," the 12th International Congresses on Membranes and Membranes Processes, London, UK. December 8, 2020 (Oral presentation)

15. **H. J. Oh**, M. S. Aboian, M. Y. J. Yi, J. A. Maslyn, W. S. Loo, X. Jiang, D. Y. Parkinson, M. W. Wilson, T. Moore, C. R. Yee, G. R. Robbins, F. M. Barth, J. M. DeSimone, S. W. Hetts and N. P. Balsara, "3D printed adsorber for capturing chemotherapy drugs before they are spread through the body," American Institute of Chemical Engineers (AIChE). Session: Biomaterials in industry and the Clinic, Pittsburgh, PA. November 1, 2018 (Oral presentation)

14. **H. J. Oh**, M. S. Aboian, M. Y. J. Yi, J. A. Maslyn, W. S. Loo, X. Jiang, D. Y. Parkinson, M. W. Wilson, T. Moore, C. R. Yee, G. R. Robbins, F. M. Barth, J. M. DeSimone, S. W. Hetts and N. P. Balsara, "3D printed adsorber for capturing chemotherapy drugs before they are spread through the body," Gordon Research Conference on Membranes: Materials and Processes, New London, NH. August 12-17, 2018 (Poster presentation)

13. W. Loo, J. Maslyn, **H. J. Oh**, and N. P Balsara, "The effect of salt on the morphologies of compositionally asymmetric block copolymer electrolytes," American Physical Society (APS) March Meeting. Session: Charged and Ion-Containing Polymers, New Orleans, LA, March 16, 2017 (Oral presentation)

12. M. A. Aboian, **H. J. Oh**, A. Gautam, A. Vardapetyan, J. Yu, W. Kuo, J. Fisher, C. Jordan, T. Moore, D. Wilson, A. Patel, M. Wilson, and S. Hetts, "Clearance of cisplatin from physiologic solutions with DNA-based ChemoFilter," The 9th Image Guided Therapy (IGT) Workshop at National Center for Image Guided Therapy, March 14-15, 2017 (Oral presentation)

11. **H. J. Oh**, B. D. Freeman, D. R. Paul and J. E. McGrath, "Water and salt transport in polymer membranes prepared by solvent-free melt processing," American Institute of Chemical Engineers (AIChE). Session: Charged Polymers for Membrane-Based Water and Energy Applications, San Francisco, CA. November 16, 2016 (Oral presentation)

10. **H. J. Oh**, X. C. Chen, N. Petzetakis, J. F. Yu, A. S. Patel, S. W. Hetts and N. P. Balsara, "Ion-containing block copolymers for efficient capture of a chemotherapy drug," American Institute of Chemical Engineers (AIChE). Session: Charged and Ion-Containing Polymers, San Francisco, CA. November 15, 2016 (Oral presentation)

9. **H. J. Oh**, X. C. Chen, N. Petzetakis, J. F. Yu, A. S. Patel, S. W. Hetts and N. P. Balsara, "Block copolymer Membranes for efficient capture of a chemotherapy drug," Gordon Research Conference on Polymer Physics, South Hadley, MA. July 24-29, 2016 (Poster presentation)

8. **H. J. Oh,** D. R. Paul, B. D. Freeman and J. E. McGrath, "Water and salt transport properties of disulfonated poly (arylene ether sulfone) membranes formed by solvent-free, melt extrusion," The 12th Annual Young Generation Technical and Leadership Conference, Dallas, TX. January 23, 2016 (Poster presentation)

7. **H. J. Oh**, D. R. Paul, B. D. Freeman, J. E. McGrath, S. Mecham and C. J. Ellison, "Sulfonated polysulfone desalination membranes by melt processing; rheological studies of sulfonated polysulfone plasticized with poly(ethylene glycol)," American Chemical Society (ACS) National Meeting, Session: Industrial and Engineering Chemistry Fellow: Symposium in Honor of Benny Freeman, Dallas, TX. March 18, 2014 (Oral presentation)

6. **H. J. Oh**, D. R. Paul, B. D. Freeman, J. E. McGrath, S. Mecham and C. J. Ellison, "Rheological studies of disulfonated poly (arylene ether sulfone) plasticized with poly (ethylene glycol) for membrane formation," American Institute of Chemical Engineers (AIChE). Session: Polymer Processing and Rheology. San Francisco, CA. November 8, 2013 (Oral presentation)

5. **H. J. Oh**, D. R. Paul, B. D. Freeman, and J. E. McGrath, "Thermal analysis and rheological studies of disulfonated poly (arylene ether sulfone) plasticized with poly (ethylene glycol) for desalination membrane formation," American Institute of Chemical Engineers (AIChE). Session: Polymer Processing and Rheology. Pittsburgh, PA. November 1, 2012 (Oral presentation)

4. **H. J. Oh**, D. R. Paul, B. D. Freeman, and J. E. McGrath, "Sulfonated Polysulfone desalination membranes by melt processing: thermal analysis and rheological studies of disulfonated poly (arylene ether sulfone) plasticized with poly (ethylene glycol)," Process Science and Technology Center (PSTC) Fall Meeting. Austin, TX. October 10, 2012 (Oral Presentation)

3. **H. J. Oh (First Prize Student Poster Competition),** D. R. Paul, B. D. Freeman and J. E. McGrath, "Sulfonated polysulfone desalination membranes by melt coextrusion," Korean-American Scientists and Engineers Association (KSEA) Central Regional Conference. Austin, TX. May 21, 2012 (Poster presentation)

2. **H. J. Oh**, D. R. Paul, B. D. Freeman, and J. E. McGrath, "Multilayered desalination membranes based on sulfonated polysulfone," Center for Layered Polymeric Systems (CLiPS) Annual Meeting. Cleveland, OH. June 7, 2010 (Oral presentation)

1. **H. J. Oh (KAIST Undergraduate Research Program Awardee)**, J. M. Park and K. P. Lee, "UI (User Interface) in product design in chemical engineering and its future application in ubiquitous society with IT devices," The 19th International Symposium on Chemical Engineering Kyushu(Japan)-Daejeon/Chungnam(Korea), Kitakyushu, Japan. 2006 (Poster presentation)

Teaching

Instructor, The Pennsylvania State University, University Park, PA

- CHE 410: Mass Transfer and Operations 2020 – 2021
- CHE 597: Mass Transfer in Polymers 2021 – present
- CHE 320: Phase and Chemical Equilibria 2022 – present

Teaching Assistant, University of Texas at Austin, Austin, TX

- CHE 264: Chemical Engineering Process & Project Laboratory 2009

Affiliations & Service

Member	American Physical Society (APS), Division of Polymer Physics (DPOLY)	2020 – present
	North American Membrane Society (NAMS)	2019 – present
	American Chemical Society (ACS) Division of Polymeric Materials: Science and Engineering (PMSE) Division of Polymer Chemistry (POLY)	2014 – present
	American Institute of Chemical Engineers (AIChE)	2012 – present
	Korean-American Scientists and Engineers Association (KSEA)	2012 – present
	Cancer Institute of the Penn State University	2021 – present
Review Panel	NSF Designing Materials to Revolutionize and Engineer our Future (DMREF) Program	2021
	NSF CBET Interfacial Engineering Program	2021, 2023
	USDA Agriculture and Food Research Initiative (AFRI) Program	2020
Proposal / Fellowship Reviewer	DOE Basic Energy Sciences (BES), Separation Science Program	2021– present
	DOE Office of Science, Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs	2020 – 2021
	DOE Office of Science Graduate Student Research (SCGSR) Program	2020
	ACS Doctoral New Investigator (DNI) Grant	2022 – present
Journal Reviewer	Science, Soft Matter, Macromolecules, ACS Macro Letters, Journal of Membrane Science, Polymer, Journal of Polymer Engineering, Journal of American Chemical Society (JACS) Au, ACS Applied Polymer Materials, Macromolecular Chemistry and Physics, Membranes, Industrial & Engineering Chemistry Research	
Elected Co-chair	Gordon Research Conference (GRC) on Membranes: Materials and Processes	2026
Co-vice Chair	Gordon Research Conference (GRC) on Membranes: Materials and Processes	2024
Short Course Co-organizer	Short course on "Polymer Physics of Separation Membranes," for the Division of Polymer Physics (DPOLY) at the 2023 American Physical Society (APS) National March meeting	2023
Committee Member	Publication Committee in the Division of Polymeric Materials: Science and Engineering (PMSE) of the American Chemical Society (ACS)	2023 – present
Discussion Leader	Gordon Research Conference (GRC) on Chemical Separations	2024
	Gordon Research Conference (GRC) on Membranes: Materials and Processes	2022
	Gordon Research Conference (GRC) on Additive Manufacturing of Soft Materials	2022
DEI Co-organizer	"Power Hour" at GRC Additive Manufacturing of Soft Materials	2022
	"Lunch with the Legends" at the North American Membrane Society (NAMS) Meeting	2022
Workshop Co-organizer	Scientists and Engineers Early Career Development (SEED) Workshop by Korean-American Scientists and Engineers Association (KSEA)	2019
Mentor	Scientists and Engineers Early Career Development (SEED) Workshop by Korean-American Scientists and Engineers Association (KSEA)	2021
Award and Poster Judge	American Physical Society (APS) National March Meeting (DPOLY)	2023 – present
	North American Membrane Society (NAMS) Annual Meeting	2021 – present
	American Chemical Society (ACS) National Meeting (PMSE)	2022 – present
Technical Session Co-organizers	American Physical Society (APS) National March Meeting	
	Polymer Membranes for Separations (Invited Session)	2023
	Transport Phenomena in Polymers and Polymer Membranes (Focus Session)	2022 – present
	Surfaces, Interfaces and Thin Films (Focus Session)	2021
	North American Membrane Society (NAMS) Annual Meeting	
	Electrochemical Separations	2023

Materials for Electrochemical Processes 2022
Medical and Pharmaceutical Applications 2021
Emerging Materials in Liquid Separations 2020
American Institute of Chemical Engineers (AIChE) National Meeting
Charged and Ion-Containing Polymers 2021– present
Charged Polymers for Membrane-Based Water and Energy Applications 2020 – present
Membrane Formation 2019
American Chemical Society (ACS) National Meeting
Polymeric Materials for Water Purification Symposium 2019

Department and Institute Service

Poster Judge, EnvironMentors Poster Symposium, Institute of Energy and Environment (IEE) at Penn State 2023 – present
Faculty Search Committee, Department of Materials Science and Engineering at Penn State 2021 – present
Mentor for Graduate Professional Student Association (GPSA) at the Penn State 2021 – present
Advisor, Omega Chi Epsilon National Honor Society for Chemical Engineering at Penn State 2020 – present
Seminar Co-organizer, Department of Chemical Engineering at the Penn State 2020 – present

Supervised Graduate Students

2023 – Luis Thiele, Materials Science and Engineering, Penn State, *Ph.D.* (co-advised with Ralph Colby)
2021 – Yongha Kim, Chemical Engineering, Penn State, *Ph.D.*
2020 – 2022 Jihyeong Ryu, Chemical Engineering, Penn State, *M.S.*

Supervised Undergraduate Researchers

2023 Olivia Gould, Biological Science and Health Professions, Penn State, *B.S.*
2023 – Kyle Tierney, Chemical Engineering, Penn State, *B.S.*
NSF REU Biofellowship, Summer 2023
2023 – Riley Brodfuehrer, Chemical Engineering, Penn State, *B.S.*
2023 – Andrew Lukaszewski, Chemical Engineering, Penn State, *B.S.*
2023 – Jack Szymanski, Chemical Engineering, Penn State, *B.S.*
2022 – 2023 Hai Doan, Chemical Engineering, Penn State, *B.S.*
2022 – 2023 Zeming He, Chemical Engineering, Penn State, *B.S.*
Drawdown Scholarship at Penn State, Summer 2022
2022 – 2023 Ziqiao Wang, Chemical Engineering, Penn State, *B.S.*
NSF IUCRC REM Scholarship, Summer 2022
2022 Alyssa Keptner, Chemical Engineering, Trine Univ. *B.S.*
NSF REU Biofellowship, Summer 2022
2021 – 2023 Sally Berry, Chemical Engineering, Penn State, *B.S.*
Equity REU Fellowship Program at Penn State, Spring 2022
2021 – Adele Godby, Chemical Engineering, Penn State, *B.S.*
Larry Duda Scholarship, Fall 2022
2021 – 2023 Evan Bhagat, Chemical Engineering, Penn State, *B.S.*
NSF REU Biofellowship, Summer 2022
Larry Duda Scholarship, Fall 2022
2021 Junwoo Kwak, Chemical Engineering, Penn State, *B.S.*
2021 Thaddeus Kolb, Chemical Engineering, Penn State, *B.S.*
2021 Christina Maranas, Materials Science and Engineering, Penn State, *B.S.*
2021 Moaz Elazzazi, Biomedical Engineering, Univ. of Buffalo, *B.S.*
NSF REU Biofellowship, Summer 2021
2020 – 2022 Wyatt Thomas, Chemical Engineering, Penn State, *B.S.*
Schreyer Honors College
Thesis: Hydrogenated and Sulfonated Triblock Copolymers for Clean Water

NSF REU Biofellowship, Summer 2021
NSF IUCRC REM Scholarship, Summer 2022

2019 – 2020 Andrew Han, Chemical Engineering, Penn State, *B.S.* (co-advised with Frederick Stewart, Idaho National Lab.)
Schreyer Honors College
Thesis: An Initial Study of Polysulfone-Nanodiamond Mixed Matrix Membranes for Oxygen/Nitrogen Separation

Student Recognition

NSF REU Biofellowship, Kyle Tierney (Penn State)	2023
AIChE Poster Presentation Competition, Evan Bhagat (Penn State) and Adele Godby (Penn State) were invited to the American Institute of Chemical Engineers (AIChE) Annual Meeting's undergraduate research poster competition	2022
Drawdown REU Scholarship, Zeming He (Penn State)	2022
NSF REU Biofellowship, Evan Bhagat (Penn State), Alyssa Keptner (Trine Univ.)	2022
NSF IUCRC REM Scholarship, Wyatt Thomas (Penn State), Ziqiao Wang (Penn State)	2022
Equity REU Fellowship, Sally Berry (Penn State)	2022
NSF REU Biofellowship, Wyatt Thomas (Penn State), Moaz Elazzazi (SUNY Buffalo)	2021
Best Poster Award, IndustryXchange Exhibition at Penn State	2020

Community Outreach

Research Mentor for Undergraduate Students, through the NSF Research Experiences for Undergraduate (REU) Program — 2021 – present

Research Mentor for Undergraduate Students — 2010 – present
Mentored and led research projects for undergraduate students on polymer science and engineering

Research Mentor for Underrepresented High School Students, through the NSF STC Polymer Envoy Program — 2010
Mentored and led research projects on polymer membranes for separations

Volunteer, Science Outreach Program at the University of Texas at Austin — 2009 – 2015
Demonstrated experiments in polymer chemistry for various groups of K-12 students

Volunteer, Austin Children's Museum, Austin, TX — 2010 – 2011
Demonstrated experiments in polymer science for preschool-aged children and families