

Christopher Johnson
Chemical Engineering and Materials Analysis
chriswjohanson700@gmail.com, [LinkedIn Profile](#)

EDUCATION

University of Pennsylvania Philadelphia, PA
Ph.D. in Chemical and Biomolecular Engineering May 2025
Advised by Dr. Chinedum Osuji
GPA: 4.00, Additional course focus in Polymer Physics, Interfacial Phenomena, and Experimental Analysis Methods

University of Delaware Newark, DE
Honors Bachelor of Chemical Engineering, English Minor May 2020
GPA: 3.98, Additional course focus in Computational Modelling and Statistics

RELEVANT EXPERIENCE

University of Maryland College Park, MD
Postdoctoral Research Fellow – Kofinas Lab Aug. 2025-Present

- Fabricated novel batteries for low-temperature charging applications.
- Collaborated with the Army Research Laboratory and academic labs.
- Prepared communications on data and research outcomes for a variety of national lab, industrial and academic perspectives.
- Mentored multiple new undergraduate and graduate student projects.

University of Pennsylvania Philadelphia, PA
Graduate Student/Research Fellow – Osuji Lab Aug. 2020-Aug. 2025

- Incorporated practical and theoretical design principles in the successful development of surfactant-derived membrane materials for ion transport and nanocontaminant filtration.
- Designed theoretical and experimental studies with end goals of water purification and controlled fluid transport, including filtration studies, SAXS, and conductivity analysis for large datasets.
- Promoted a culture of health and safety in the laboratory environment as safety officer, in addition to adhering to regulatory requirements.
- Participated in both industrial and academic collaborations, translating knowledge for a variety of skill levels, and managed multiple teams to finish successful publications.
- Experienced with dielectric spectroscopy, scattering methods, coating deposition, and materials development.

University of Pennsylvania/University of Delaware Newark, DE and Philadelphia, PA
Teaching Assistant May 2018-Dec. 2022

- Mentored graduate and undergraduate students.
- Prepared and presented lecture materials for undergraduate and graduate students in experimental methods, chemical synthesis and polymer dynamics.
- Received positive feedback regarding quality of teaching, mentorship, and communication.

- Performed molecular dynamics experiments through LAMMPS to study the thermodynamics of polymeric micelles.
- Improved visualization techniques for presentation of data and developed code to analyze large amounts of position vector data.

RELEVANT SKILLS

Leadership: Communication, project management, team organization, scientific writing, public engagement.

General Software: Rhino, Adobe Photoshop, Affinity Publisher, Origin, LabView, Vegas Pro, GIMP, Microsoft Office, COMSOL.

Coding Languages: MATLAB, Bash, Python (numpy, scipy, matplotlib, pandas, pyVISA).

Experimental Machinery/Methods/Theory: Small angle x-ray scattering (transmission, grazing incidence, temperature/humidity-controlled), dynamic light scattering (DLS), scanning electron microscopy (SEM), transmission electron microscopy (TEM), vapor sorption analysis, rheometry, optical microscopy, electrochemical impedance spectroscopy (EIS), dynamic mechanical analysis (DMA), FTIR spectroscopy, UV-Vis spectroscopy, differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), spin-coating, dip-coating, blade-coating, NMR relaxometry, Design of Experiments.

PUBLICATIONS AND PRESENTATIONS

1. Dong, R.; Johnson, C.; Osuji, C. Fast potassium ion transport in sub-1 nm pores of self-assembled polymer membranes derived from linoleic acid. *ACS Materials Letters* (2025).
2. Ball, R.; Johnson, C.; Zhang, L.; Hopkins, R.; Hwang, J.; Winey, K.; Patel, A.; Osuji, C.; Anna, J. Correlating Solvation Shell Dynamics and Ion Transport in Highly Ordered Nanoporous Polymers. *ChemRxiv* (2025). (Preprint.)
3. C. Johnson, L. Zhang, K. Culley, S. Oh, D. Gin, G. Geise, A. Patel, K. Winey, C. Osuji. The Effects of Morphology and Hydration on Anion Transport in Self-Assembled Nanoporous Membranes. *ACS Nano* (2025).
4. Shapturenka, P.; Johnson, C.; Osuji, C. Soft-AE: Accelerating conductive polymer development through accessible autonomous experimentation. Poster, APS March Meeting (2025).
5. Impact of direct hexagonal mesophase geometry and hydration on ion motion, C. Johnson, ACS Fall, (2024).
6. Lyotropic Gyroid Mesophase Compositions, Polymer Compositions Comprising the Same, Methods of Preparation Thereof, and Methods of Using the Same, DL Gin, P Li, C Osuji, O Imran, C Johnson, SS Dyer - US Patent App. 17/949,072, 2023.
7. Transport in Resilient Anion Exchange Membranes Derived from Crosslinked Lyotropic Mesophases, C. Johnson, ACS Fall, (2023).
8. L. Bodkin, C. Johnson, K. Culley, Z. Krajnak, J. Hage, N. K. Kim, C. O. Osuji, D. L. Gin. Effect of localized control of cross-link density on mechanical properties of bicontinuous cubic lyotropic networks via copolymerization with different singly-polymerizable monomers. *Polymer*, (2023).
9. Sulfonic-acid-based lyotropic bicontinuous cubic polymer network for molecular-size-selective heterogeneous catalysis. K. Culley, C. Johnson, D. L. Gin. *Chemical Communications* (2023).
10. P. Li, C. Johnson, S. S. Dyer, C. O. Osuji, D. L. Gin. A pH- and Light-responsive Nanoporous Lyotropic Gyroid Polymer Network. *Advanced Materials Interfaces* (2022).
11. Studies on the Film Applications of Self-Assembled Lyotropic Mesophase Materials, Poster, University of Pennsylvania Graduate Student Symposium (2021).

SELECTED HONORS AND AWARDS

- Diamond State Scholarship (2016-2019)
- Elda Wollaeger Gregory Poetry Award (2020)
- Published in *A Guide to Professional Writing* (2020)
- Published in *Caesura* poetry magazine (2020)
- Finalist – NNCI Scientific Imaging Competition (2021)
- VIEST Graduate Student Fellowship (2022-2023)
- Finalist – Penn Energy Week Lightning Talks (2024)
- Finalist – Penn 3 Minute Thesis Competition (2024)