

# Lorena S. Grundy

Philadelphia, PA 19104

grundy.lorena@gmail.com  
website: lorena-grundy.com

Updated Jul. 2024

---

EDUCATION	<b>University of California, Berkeley</b> <ul style="list-style-type: none"><li>• Ph.D. in Chemical and Biomolecular Engineering</li><li>• Dissertation title: "Polymer Electrolytes and the Limiting Current"</li></ul> <b>Princeton University</b> <ul style="list-style-type: none"><li>• B.S.E. <i>cum laude</i> in Chemical and Biological Engineering</li><li>• Certificates in Sustainable Energy and Applications of Computing</li></ul>	2017–2022 2013–2017
PROFESSIONAL APPOINTMENTS	<b>University of Pennsylvania</b> <ul style="list-style-type: none"><li>• Practice Assistant Professor, Chemical and Biomolecular Engineering</li></ul>	2024–present
RESEARCH EXPERIENCE	<b>Koretsky Group</b> , Tufts University: post-doctoral fellow <ul style="list-style-type: none"><li>• Dept. of Chemical and Biological Engineering, Dept. of Education, and Institute for Research on Learning and Instruction (IRLI)</li><li>• Supported by <b>ASEE Postdoctoral Fellowship</b></li></ul> <b>Balsara Lab</b> , UC Berkeley: graduate student researcher <ul style="list-style-type: none"><li>• Characterization of ion transport through polymer electrolytes using NMR</li><li>• Analysis of morphology using NMR and small angle X-ray scattering (SAXS)</li><li>• Block copolymer synthesis using anionic polymerization under high vacuum</li><li>• Electrochemical characterization and concentrated solution theory</li></ul> <b>Balsara Lab</b> , UC Berkeley: lab safety coordinator <ul style="list-style-type: none"><li>• COVID-19 response</li><li>• Lab chemical and equipment inventory and maintenance</li></ul> <b>Berkeley Nuclear Magnetic Resonance (NMR) Facility</b> : assistant manager <ul style="list-style-type: none"><li>• Responsible for training all new users on NMR equipment</li><li>• Maintenance and repair of NMR instruments</li></ul> <b>Priestley Lab</b> , Princeton University: undergraduate researcher <ul style="list-style-type: none"><li>• Summer research: mechanism of Janus nanoparticle formation</li><li>• Senior thesis: morphology of nanoparticles made from block copolymer blends</li><li>• Experience with polymers, electron microscopy (TEM and SEM), nanoparticle fabrication techniques</li></ul> <b>Avalos Lab</b> , Princeton University: undergraduate research <ul style="list-style-type: none"><li>• Research on yeast metabolic engineering for biofuel applications</li><li>• Experience with <i>E. coli</i> and <i>S. cerevisiae</i>, molecular biology, HPLC</li></ul>	2022–present 2017–2022 2018–2021 2019 2016–2017 2015
AWARDS AND HONORS	American Society for Engineering Education (ASEE) Postdoctoral Fellowship Berkeley Energy & Resources Collaborative (BERC) 1 <sup>st</sup> Place Poster Prize Winner Selected for ACS POLY Excellence in Graduate Research Symposium Joe Wong Poster Award: Stanford Synchrotron Light Source User Meeting U.C. Berkeley Outstanding Graduate Student Instructor (GSI) Award U.C. Berkeley CBE GSI Excellence Award U.C. Berkeley Outstanding GSI Award Elected to the Society of Sigma Xi	2022-2024 2022 2022 2021 2021 2020 2019 2017
JOURNAL PUBLICATIONS	<b>Grundy, L. S.</b> ; Koretsky, M. D. "More Conceptual Than Actual": Epistemic Metacognition in response to a Non-Numerical Statics Question. Under review. Koretsky, M. D.; Nolen, S. B.; Galisky, J.; Auby, H.; <b>Grundy, L. S.</b> Progression from the Mean: Cultivating Instructors' Unique Trajectories of Practice Using Educational Technology. <i>Journal of Engineering Education</i> <b>2024</b> , <i>113</i> (2), 330-359. Galluzzo, M. D.; Steinrück, H.-G., Takacs, C. J.; Mistry, A.; <b>Grundy, L. S.</b> ; Cao, C.; Narayanan, S.; Dufresne, E. M.; Zhang, Q.; Srinivasan, V.; Toney, M. F.; Balsara, N. P. Probing transference and field-induced polymer velocity in block copolymer electrolytes. <i>Cell Reports Physical Science</i> <b>2024</b> , <i>5</i> , 101766.	

- Abdo, E. A.; **Grundy, L. S.**; Galluzzo, M. D.; Loo, W. S.; Fong, A. Y.; Takacs, C. J.; Balsara, N. P. Cylinder-Gyroid Phase Transition in a Block Copolymer Electrolyte Induced by Ionic Current. *Macromolecules* **2024**, *57* (2), 503-513.
- Quill, T. J.; LeCroy, G.; Halat, D. M.; Sheelamantula, R.; Marks, A.; **Grundy, L. S.**; McCulloch, I.; Reimer, J. A.; Balsara, N. P.; Giovannitti, A.; Salleo, A.; Takacs, C. J. An Ordered, Self-Assembled Nanocomposite with Efficient Electronic and Ionic Transport. *Nature Materials* **2023**, *22*, 362-368.
- Grundy, L. S.**; Fu, S.; Galluzzo, M. D.; Balsara, N.P. The Effect of Annealing on Ionic Conductivity of Block Copolymer Electrolytes. *Macromolecules* **2022**, *55* (23), 10294-10301.
- Grundy, L. S.**; Fu, S.; Hoffman, Z. J. Electrochemical Characterization of PEO/LiTFSI Electrolytes at the Solubility Limits. *Macromolecules* **2022**, *55* (20), 9030-9038.
- Grundy, L. S.**; Galluzzo, M. D.; Loo, W. S.; Fong, A.; Balsara, N. P.; Takacs, C. P. Inaccessible Polarization-Induced Phase Transitions in a Block Copolymer Electrolyte: An Unconventional Mechanism for the Limiting Current. *Macromolecules* **2022**, *55* (17), 7637-7649.
- Mistry, A.; **Grundy, L. S.**; Halat, D. M.; Newman, J.; Balsara, N. P.; Srinivasan, V. Effect of Solvent Motion on Ion Transport in Electrolytes. *J. Electrochem. Soc.* **2022**, *169* (4), 040524.
- Galluzzo, M. D.; **Grundy, L. S.**; Takacs, C. J.; Cao, C.; Steinrück, H.-G.; Fu, S.; Rivas Valdez, M. A.; Toney, M. F.; Balsara, N. P. Orientation-Dependent Distortion of Lamellae in a Block Copolymer Electrolyte under DC Polarization. *Macromolecules* **2021**, *54* (17), 7808-7821.
- Halat, D. M.; Snyder, R. L.; Sundararaman, S.; Choo, Y.; Gao, K. W.; Hoffman, Z. J.; Abel, B. A.; **Grundy, L. S.**; Galluzzo, M. D.; Gordon, M. P.; Celik, H.; Urban, J. J.; Prendergast, D.; Coates, G. W.; Balsara, N. P.; Reimer, J. A. Modifying Li<sup>+</sup> and Anion Diffusivities in Polyacetal Electrolytes: A Pulsed-Field-Gradient NMR Study of Ion Self-Diffusion. *Chemistry of Materials* **2021**, *33* (13), 4915-4926.
- Grundy, L. S.**; Shah, D. B.; Nguyen, H. Q.; Diederichsen, K. M.; Celik, H.; DeSimone, J. M.; McCloskey, B. D.; Balsara, N. P. Impact of Frictional Interactions on Conductivity, Diffusion, and Transference Number in Ether and Perfluoroether-Based Electrolytes. *J. Electrochem. Soc.* **2020**, *167* (12), 120540.
- Loo, W. S.; Faraone, A.; **Grundy, L. S.**; Gao, K. W.; Balsara, N. P. Polymer Dynamics in Block Copolymer Electrolytes Detected by Neutron Spin Echo. *ACS Macro. Lett.* **2020**, *9* (5), 639-645.
- Shah, D. B.; Nguyen, H. Q.; **Grundy, L. S.**; Olson, K. R.; Mecham, S. J.; DeSimone, J. M.; Balsara, N. P. Difference Between Approximate and Rigorously Measured Transference Numbers in Fluorinated Electrolytes. *Physical Chemistry Chemical Physics* **2019**, *21* (15), 7857-7866.
- Grundy, L. S.**; Sethi, G. K.; Galluzzo, M. D.; Loo, W. S.; Maslyn, J. A.; Teran, A. A.; Thelen, J. L.; Timachova, K.; Reimer, J. A.; Madsen, L. A.; Balsara, N. P. Detection of the Order-to-Disorder Transition in Block Copolymer Electrolytes Using Quadrupolar <sup>7</sup>Li NMR Splitting. *ACS Macro Letters* **2019**, *8* (2), 107-112.
- Grundy, L. S.**; Lee, V. E.; Li, N.; Sosa, C.; Mulhearn, W. D.; Liu, R.; Register, R. A.; Nikoubashman, A.; Prud'homme, R. K.; Panagiotopoulos, A. Z.; Priestley, R. D. Rapid Production of Internally Structured Colloids by Flash Nanoprecipitation of Block Copolymer Blends. *ACS Nano* **2018**, *12* (5), 4660-4668.
- Highlighted in *Science* **2018**, *360* (6392), 977.
- Sosa, C.; Lee, V. E.; **Grundy, L. S.**; Burroughs, M.; Lui, R.; Prud'homme, R. K.; Priestley, R. D. Combining Precipitation and Vitrification to Control the Number of Surface Patches on Polymer Nanocolloids. *Langmuir* **2017**, *33* (23), 5835-5842.
- CONFERENCE PAPERS **Grundy, L. S.**; Koretsky, M. D. Contradicting Objects: An Activity Systems Perspective Towards Transformative Learning. *Proceedings of the American Society for Engineering Education Annual Conference* **2024**.

**Grundy, L. S.** Reflections on a “Math Disaster”: the Role of Instructor Confusion in the Classroom. *Proceedings of the American Society for Engineering Education Annual Conference* **2024**.

Welsh, K. E.; **Grundy, L. S.**; Self, B. P. Thinking Outside the Box: Understanding Student Thinking on Statics in Mechanics. *Proceedings of the American Society for Engineering Education Annual Conference* **2024**.

**Grundy, L. S.**; Koretsky, M. D. Student Metacognitive Reflection on a Conceptual Statics Question. *Proceedings of the American Society for Engineering Education Annual Conference* **2023**.

- PRESENTATIONS **Grundy, L. S.** Contradicting Objects: An Activity Systems Perspective Towards Transformative Learning (talk), ASEE Annual Conference, June 2024.
- Grundy, L. S.** Reflections on a “Math Disaster”: the Role of Instructor Confusion in the Classroom (talk). ASEE Annual Conference, June 2024.
- Grundy, L. S.** Framework and Initial Steps Towards Industry-Relevant Undergraduate Electrochemical Engineering Education (**invited talk**). Electrochemical Society Spring Meeting, May 2024.
- Grundy, L. S.** Student Metacognitive Reflection on a Conceptual Statics Question. ASEE Annual Conference (talk), June 2023.
- Grundy, L. S.** Limitations to our Understanding of the Limiting Current (**invited talk**). Battery Modeling Webinar Series, 2023.
- Grundy, L. S.** Limitations on Charging Rates in Lithium Metal Batteries with Block Copolymer Electrolytes (**invited talk**). Tufts University Chemical Engineering Department Colloquium, 2022.
- Grundy, L. S.** Inaccessible Current-Induced Phase Transitions in Block Copolymer Electrolytes (talk). ACS Spring Meeting, 2022.
- Selected for ACS POLY **Excellence in Graduate Research** Symposium
- Grundy, L. S.** Inaccessible Phase Transitions in Block Copolymer Electrolytes (talk). APS March Meeting, 2022
- Presented in the APS DPOLY Dillon Medal Symposium
- Grundy, L. S.** Distortion of Lamellae in a Block Copolymer Electrolyte Under Polarization (**invited focus session talk**). APS March Meeting, 2022.
- Grundy, L. S.** Distortion of Lamellae in a Block Copolymer Electrolyte Under Polarization (poster). Stanford National Accelerator Laboratory User Meeting, 2021.
- Received Joe Wong **Outstanding Poster Award**
- Grundy, L. S.** Distortion of Lamellae in a Block Copolymer Electrolyte Under Polarization (**invited talk**). ALS User Meeting, 2021.
- Grundy, L. S.** Impact of Frictional Interactions on Conductivity and Transference Number in Ether-Based Electrolytes (talk). APS March Meeting, 2021.
- Grundy, L. S.** Using  $^7\text{Li}$  NMR to Detect Order-to-Disorder Transitions in Block Copolymer Electrolytes (**invited talk**). ACS Fall Meeting, 2020.
- Grundy, L. S.** Locating Phase Transitions in Block Copolymer Electrolytes (talk). APS March Meeting, 2019.
- Grundy, L. S.**; Mongcopa, K. I. Correlation Between Monomeric Friction Coefficient and Ionic Diffusivity in Polymer Electrolytes (poster). Polymer Physics Gordon Research Conference, 2018.
- Grundy, L. S.**; Mason, L. et al. Flash Nano-Precipitation of Polymer Blends: A Role for Fluid Flow? (talk) Annual Meeting of the APS Division of Fluid Dynamics, 2017.

## TEACHING

### Lead Instructor

- Energy and Sustainability: Science, Engineering and Technology fall 2024  
(CBE/ENGR 4215/5215)
  - New semester-long technical elective developed as part of the core of a planned Energy and Sustainability MS program
- Material and Energy Balances of Chemical Processes (CBE 2300) fall 2024
  - Core undergraduate course, 29 students

- Electrochemical Engineering (ChBE 193) fall 2023
  - Developed semester-long elective course for solo lead delivery fall 2023
  - On student evaluations, received overall instructor evaluation of 4.83 / 5, compared with department average of 3.90
- Learning and Teaching in STEM: A Seminar for Learning Assistants (ED 20) spring 2023
  - Co-instructed pedagogy course for undergraduate learning assistants
- Tufts Academic Support System for Engr. Learning (TASSEL) Instructor** fall 2022
  - Developed materials for and led twice weekly workshops to support first-year engineering students in calculus and introductory physics
- Graduate Student Instructor (GSI)**
  - Graduate Thermodynamics and Statistical Mechanics (CBE 240; remote) fall 2020
    - Received Outstanding GSI Award (4-5 recipients/semester)
  - Introduction to Chemical Engineering Design (CBE 40) spring 2020
    - Received Departmental GSI Excellence Award (2-3 recipients/year)
    - Transitioned course to remote instruction at the onset of COVID-19
  - Introduction to Chemical Process Analysis (CBE 140) fall 2018
    - Received Outstanding GSI Award (4-5 recipients/semester)
  - Introduction to Chemical Engineering Design (CBE 40) fall 2017
- Berkeley Pre-Engineering Program (PREP) Instructor** 2020–2021
  - Designed and taught a fully-remote, three-week chemistry course to incoming Berkeley undergraduate engineering students who are first-generation college students, Pell eligible, or from non-traditional engineering backgrounds
  - Student confidence increased 49% in chemistry overall
  - Led workshops on student success strategies

## MENTEES

- Deja Preusser – Oregon State University CBEE undergraduate student '23 2022-2023
- Supervised senior honors thesis research on the impacts of COVID on undergraduate instruction
- Emily Abdo – UC Berkeley CBE Ph.D. candidate 2021-2022
- Designed Ph.D. research project on *in situ* SAXS characterization of polymer electrolytes and supervised training and research development
- Sean Fu – UC Berkeley CBE undergraduate student '23 2021-2022
- Supervised undergraduate research on electrochemical characterization of polymer electrolytes, resulting in 3 peer-reviewed publications and admission to several top Ph.D. programs
- Karim Aruta – UC Berkeley CBE Ph.D. candidate 2020-2022
- Designed Ph.D. research project on NMR characterization of polymer electrolytes and supervised training and research development
- Rohan Chakraborty – UC Berkeley CBE undergraduate student '19 2018-2019
- Current Ph.D. student at University of Minnesota
  - Supervised senior undergraduate research on PFG-NMR characterization of polymer electrolytes, including training, data analysis, presentation

## SERVICE

- ASEE Chemical Engineering Division (ChED):** Communications Chair 2023-present
- Conference Session Chair / Moderator:** Electrochemical Society Meeting, ASEE Annual Conference (ChED and ERM Divisions) 2023-present
- Tufts University Postdoctoral Association:** Executive Committee Member 2023-2024
- Berkeley CBE Graduate Student Advisory Committee (GSAC) President** 2019–2020
- Elected to lead and represent graduate students to the faculty; administered, analyzed, and reported on annual departmental climate surveys
  - Achieved stipend increase, increased inclusivity in faculty hiring and graduate admissions, and implemented anti-racism seminars and training
- Berkeley CBE GSAC Vice President, Treasurer, and Social Chair** 2018–2019
- Managed organization budget and coordinated all departmental social events
- Respect is a Part of Research (RPR):** facilitator 2019–2021

	<ul style="list-style-type: none"> <li>Facilitated peer-led sexual violence / sexual harassment (SVSH) training following Title IX requirements</li> </ul>	
	<b>Coordinated Community Review Team for Sexual Violence and Misconduct</b>	2021–2022
	<ul style="list-style-type: none"> <li>Part of the chancellor’s committee, largely composed of administrators and staff, working to unify SVSH prevention and response campus-wide</li> </ul>	
	<b>Berkeley CBE Orientation Co-Chair</b>	2021
	<ul style="list-style-type: none"> <li>Rebuilt graduate student orientation program with a focus on inclusion</li> </ul>	
	<b>Affinity Groups Fellow</b>	2021
	<ul style="list-style-type: none"> <li>Coordinated a summer program to connect trainees with a shared identity</li> </ul>	
	<b>Berkeley CBE Remote Instruction Committee</b>	2020–2022
	<ul style="list-style-type: none"> <li>Coordinated department transition to online learning during COVID-19, including technology and workshops for faculty and students</li> </ul>	
	<b>Princeton Charter Club President</b>	2015–2017
	<ul style="list-style-type: none"> <li>Elected to lead an undergraduate eating club, managed a \$60,000 budget</li> <li>Appointed and led a team of 13 undergraduate officers</li> <li>Led an effort to increase financial aid for dining options</li> </ul>	
	<b>Undergraduate Council</b> , Princeton Chem & Bio Engineering department	2016–2017
	<b>Princeton Outdoor Action</b> : pre-orientation backpacking trip leader	2014–2017
	<ul style="list-style-type: none"> <li>Led groups of inexperienced freshmen on week-long backcountry trips</li> </ul>	
REVIEWING	<b>Journal Reviewer:</b> <i>Journal of Engineering Education, Chemical Engineering Education, ACS Macromolecules, Journal of the Electrochemical Society, Cell Biology Education – Life Sciences Education</i>	2019–present
	<b>Conference Paper Reviewer:</b> American Society for Engineering Education	2023-present
ADDITIONAL SKILLS	Proficient in Python, Java, C, HTML, and Microsoft Office CPR and First Aid certification, Leave No Trace Master Educator certification Leadership, Team-Building, and Conflict Resolution Training	