

Lorena S. Grundy

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EDUCATION	University of California, Berkeley <ul style="list-style-type: none">• Ph.D. in Chemical and Biomolecular Engineering (CBE)• Dissertation: “Polymer Electrolytes and the Limiting Current” advised by Prof. Nitash P. Balsara	2017–2022
	Princeton University <ul style="list-style-type: none">• B.S.E. <i>cum laude</i> in Chemical and Biological Engineering (CBE)• Certificates in Sustainable Energy and Applications of Computing• Senior thesis: “Formation of Novel Nanoparticle Morphologies Using Homopolymer / Block Copolymer Blends in Flash NanoPrecipitation (FNP)” advised by Prof. Rodney D. Priestley	2013–2017
PROFESSIONAL APPOINTMENTS	University of Pennsylvania <ul style="list-style-type: none">• Practice Assistant Professor, Chemical and Biomolecular Engineering• Director and Faculty Advisor, Energy and Sustainability (ENSU) Minor Program• Founding Director and Faculty Advisor (pending program approval), new Master of Science in Engineering degree program in Energy and Sustainability Engineering	2024–present
RESEARCH EXPERIENCE	Koretsky Group , Tufts University: post-doctoral fellow <ul style="list-style-type: none">• Dept. of Chemical and Biological Engineering, Dept. of Education, and Institute for Research on Learning and Instruction (IRLI)• Fully supported by ASEE Postdoctoral Fellowship	2022–2024
	Balsara Lab , UC Berkeley: graduate student researcher <ul style="list-style-type: none">• Characterization of ion transport through polymer electrolytes using NMR, electrochemical characterization, and concentrated solution theory• Analysis of morphology using NMR and small angle X-ray scattering (SAXS)• Block copolymer synthesis using anionic polymerization under high vacuum	2017–2022
	Balsara Lab , UC Berkeley: lab safety coordinator <ul style="list-style-type: none">• Lab chemical and equipment inventory and maintenance, COVID-19 response	2018–2021
	Berkeley Nuclear Magnetic Resonance (NMR) Facility : assistant manager <ul style="list-style-type: none">• Maintenance, repair, and training of all new users on NMR equipment	2019
	Priestley Lab , Princeton University: undergraduate researcher <ul style="list-style-type: none">• Morphology and formation mechanism of nanoparticles made from block copolymer blends, analyzed using electron microscopy (TEM, SEM)	2016–2017
	Avalos Lab , Princeton University: undergraduate research <ul style="list-style-type: none">• Research on yeast metabolic engineering for biofuel applications• Experience with <i>E. coli</i> and <i>S. cerevisiae</i>, molecular biology, HPLC	2015
AWARDS AND HONORS	Selected for Penn Integrating Sustainability Across the Curriculum program	2025
	Berkeley Energy & Resources Collaborative (BERC) 1 st Place Poster Prize Winner	2022
	Selected for ACS POLY Excellence in Graduate Research Symposium	2022
	Joe Wong Poster Award: Stanford Synchrotron Light Source User Meeting	2021
	U.C. Berkeley Outstanding Graduate Student Instructor (GSI) Award	2021
	U.C. Berkeley CBE GSI Excellence Award	2020
	U.C. Berkeley Outstanding GSI Award	2019
	Elected to the Society of Sigma Xi	2017
FUNDING	Penn Engr. Academic Innovation Fund (\$5,000) for new energy lab course dev.	2025
	Penn Sustainability Green Fund award (\$10,000)	2025
	Engineering for One Planet travel grant	2025
	American Society for Engineering Education (ASEE) Postdoctoral Fellowship	2022–2024

TEACHING

Lead Instructor*University of Pennsylvania*

- Renewable Energy Technologies Lab (ENGR 5XXX) fall 2026
 - New lab course in development, planned for fall 2026
- Energy and Sustainability: Science, Engineering and Technology (CBE/ENGR 4215/5215) fall 2025
- Engineering Sustainability at Penn (ENGR 5020) spring 2025
 - New project-based course in collaboration with the Penn Sustainability Office, using Campus as Lab principles to engage students in authentic campus sustainability projects
- Energy and Sustainability: Science, Engineering and Technology (CBE/ENGR 4215/5215) spring 2025
- Energy and Sustainability: Science, Engineering and Technology (CBE/ENGR 4215/5215) fall 2024
 - New technical elective developed as part of the core of a planned Master's degree in Energy and Sustainability Engineering, 17 students
 - Student evaluations: overall instructor rating of 3.50 (0 – 4 scale)
- Material and Energy Balances of Chemical Processes (CBE 2300) fall 2024
 - Core undergraduate course, 33 students
 - Student evaluations: overall instructor rating of 3.57 (0 – 4 scale) compared with department average of 2.94 for core courses

Tufts University

- Electrochemical Engineering (ChBE 193) fall 2023
 - Developed technical elective course for solo lead delivery
 - Student evaluations: overall instructor rating of 4.83 (1 – 5 scale) 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

- Developed and led twice weekly workshops to support first-year engineering students in calculus and introductory physics fall 2022

Graduate Student Instructor (GSI), University of California, Berkeley

- 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

- Designed and taught a fully-remote, three-week chemistry course to incoming Berkeley undergraduate engineering students who are Pell eligible, first-generation college students, or from under-served schools 2020–2021
- Student confidence increased 49% in chemistry overall
- Led workshops on student success strategies

MENTEES

- Ngaatendwe Manyika – Penn Mechanical Engineering undergraduate '27 2025
 - Proposal for student-faculty course co-development of ENGR 5XXX Renewable Energy Technologies Lab selected by the Environmental Innovations Initiative (EII) Integrating Sustainability Across the Curriculum (ISAC) program
- Olga Belyanina and Sebastian Startz – Wharton MBA candidates 2025
 - Co-advising (with Prof. Jennifer Wilcox) independent study: "Navigating Barriers to Climate Tech Commercialization"
- Caroline Bureau – Tufts University ChBE undergraduate '25 2024

- Advised undergraduate research on faculty teaching practices
- Deja Preusser – Oregon State University CBEE undergraduate '23 2022–2023
- Supervised senior honors thesis research on the impacts of COVID on undergraduate instruction
 - Current role: Pharm.D. candidate '27, University of Southern California
- Emily Abdo – UC Berkeley CBE Ph.D. candidate '26 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 '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
 - Current role: Cell Data Engineer, Tesla
- Karim Karouta – 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
- Supervised senior undergraduate research on PFG-NMR characterization of polymer electrolytes, including training, data analysis, presentation
 - Current role: Ph.D. candidate, University of Minnesota

SERVICE

Penn University-wide, School of Engineering, and CBE Department Service

- Pending school approval: Founding Director and Faculty Advisor, Master of Science in Engineering degree program in Energy and Sustainability Engineering, planned for planned fall 2026 launch. Led curriculum development and implementation, including consultation with over 120 faculty, student, and staff stakeholders 2024–present
- Director of school-wide Energy and Sustainability (ENSU) minor 2024–present
 - Implemented reforms to curriculum and advising process based on student and faculty feedback
- CBE Department
 - Energy and Sustainability committee 2024–present
 - Designed and implemented standardized department-wide mid-semester course feedback process 2025
- American Association of University Professors (AAUP) Penn Chapter 2025–present
 - Vice President 2025–present
 - Non-Tenure Track (NTT) Task Force
- Faculty Advisor, Engineers Without Borders 2025–present
- Strategic Planning Committee on Educating and Empowering Engineers 2025
 - Committee to draft education section of SEAS 2026-2030 Strategic Plan
- Faculty Affiliate, Ethnography in Education Research Forum (Penn GSE) 2025–present
- Member, campus-wide Climate and Health Education Working Group 2025–present
- Dissertation committee service:
 - Shelvey Swett, CBE (advisor: Jennifer Wilcox) 2025–present
- Individual academic and career advising: 30+ students 2024–present
- Recommendation letters: 5 2024–present

Panels and Events

- Kleinman Center for Energy Policy Energy Week Lightning Talks: judge (Feb. 2025)
- Advancing Women in Engineering Master's Student Panel (Jan. 2025)
- Society of Women Engineers Career Pathways Panel (Nov. 2024)
- Perspectives on Teaching Panel for UC Berkeley GSIs (Nov. 2024)
- Underrepresented Student Advisory Board in Engineering Fireside Chat (Oct. 2024)
- UC Berkeley CBE Alumni Panel (Nov. 2023)
- UC Berkeley GWExSWE Graduate Career Pathways Panel (Apr. 2022)

ASEE Chemical Engineering Division (ChED): Communications Chair 2023–present

- Collect community announcements, create and distribute monthly newsletter
- AICHe Education Division:** Membership Committee 2024–present
- ABET:** Program Evaluator (PEV), Engineering Accreditation Commission (EAC) 2025–present
- Engineering for One Planet (EOP):** Network Member 2025–present
- Selective national initiative for sustainability-focused engineering education
- Conference Session Chair / Moderator**
- ASEE Annual Conference (ChED and ERM Divisions) 2023–present
- Electrochemical Society Meeting 2024
- Tufts University Postdoctoral Association:** Executive Committee Member 2023–2024
- ColorMePhD:** Co-developed coloring page “A-Maze-ing Polymers” featuring PhD research by women in STEM for ColorMePhD Vol. 2, led by Julie Rorrer 2020
- 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
- Facilitated peer-led sexual violence / sexual harassment (SVSH) training following Title IX requirements
- Coordinated Community Review Team for Sexual Violence and Misconduct** 2021–2022
- Part of the chancellor’s committee, largely composed of administrators and staff, working to unify campus-wide SVSH prevention and response
- Berkeley CBE Orientation Co-Chair** 2021
- Rebuilt graduate student orientation program with a focus on inclusion
- Affinity Groups Fellow** 2021
- Coordinated a summer program to connect trainees with a shared identity
- Berkeley CBE Remote Instruction Committee** 2020–2022
- Coordinated department transition to online learning during COVID-19, including technology and workshops for faculty and students
- Princeton Charter Club President** 2015–2017
- Elected to lead an undergraduate eating club, managed a \$60,000 budget
 - Appointed and led a team of 13 undergraduate officers
 - Led an effort to increase financial aid for dining options
- Undergraduate Council,** Princeton CBE department 2016–2017
- Princeton Outdoor Action:** pre-orientation backpacking trip leader 2014–2017
- Led groups incoming undergraduate students on week-long backcountry trips

REVIEWING

- Journal Reviewer** 2019–present
- *Journal of Engineering Education*
 - *Chemical Engineering Education*
 - *ACS Macromolecules*
 - *Journal of the Electrochemical Society*
 - *Cell Biology Education – Life Sciences Education*
- Conference Paper Reviewer:**
- American Society for Engineering Education 2023–present
 - Judge, Best DEI Paper Award, ASEE Chemical Engineering Division 2024–present
- Book Review:** Koretsky, M. D.; Grundy, L. S. Having a Teaching Mentor on Your Bookshelf: A Review of *Teaching and Learning STEM: A Practical Guide*. *International Journal of Engineering Education* 2024, 40 (4), 993–995.

JOURNAL PUBLICATIONS

- Grundy, L. S.;** Koretsky, M. D. Transactional Schooling and the Resistance Myth: Unpacking Systemic Contradictions to Enable Active Learning. In preparation.

- Grundy, L. S.;** Koretsky, M. D. “More Conceptual Than Actual”: Epistemic Metacognition in response to a Non-Numerical Statics Question. Under review.
- Auby, H. A.; **Grundy, L. S.;** Huffman, S.; Cantilina, K.; Gavitte, S. B.; Kaczynski, S. E.; Penyai, M.; Koretsky, M. D. Reflections on a mentored group peer review process. *Journal of Engineering Education* **2024**, *113*, 1110-1114.
- Koretsky, M. D.; Nolen, S. B.; Galisky, J.; Auby, H.; **Grundy, L. S.** Progression from the Mean: Cultivating Instructors’ Unique Trajectories of Practice Using Educational Technology. *Journal of Engineering Education* **2024**, *113* (2), 330-359.
- Galluzzo, M. D.; Steinrück, H.-G., Takacs, C. J.; Mistry, A.; **Grundy, L. S.;** 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. *Cell Reports Physical Science* **2024**, *5*, 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⁺ 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 ^7Li 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

Welsh, K. E.; **Grundy, L. S.**; Self, B. P. Unpacking Student Reasoning in Rigid Body Equilibrium: Insights from Think Aloud Protocols. *Proceedings of the American Society for Engineering Education Annual Conference* **2025**.

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. Empowering Future Leaders: A Workshop to Share Best Practices in Interdisciplinary Graduate Training to Ensure a Fair Energy Transition, May 2025.

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 ^7Li 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.

ADDITIONAL
SKILLS

Python, Java, C, HTML, Adobe Illustrator
CPR and First Aid certification, Leave No Trace Master Educator certification
Leadership, Team-Building, and Conflict Resolution Training