Qinxi (Celine) Liu

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EDUCATION

University of Pennsylvania, Philadelphia, PA — Dec 2025
- Candidate for M.S.E., Mechanical Engineering, Concentration in Mechanics of Materials
- Cumulative GPA: 4.00/4.00

University of Pennsylvania, *Vagelos Dual-degree Program in Energy Research,* Philadelphia, PA — May 2024
- B.S.E., *Summa Cum Laude*, Materials Science and Engineering
- B.A., *Summa Cum Laude*, Physics, Concentration in Computer Techniques
- Cumulative GPA: 3.97/4.00

PROFESSIONAL EXPERIENCE

Cell Materials Development Intern, *Tesla, Inc.,* Palo Alto, CA — Jun 2024 – Present
- Accelerate Lithium-ion cell materials selection from 6 months+ of cell cycling to <1 day of component tests by developing a custom mechanical fatigue tester to reproduce a leading field failure mode of cell separators.
- Commission the tester by reducing 95% of data variability through troubleshooting uneven indenter pressure distribution and innovating short-term solutions to align the indenter to the base plate.
- Expedite 88% of tester calibration time by driving a cross-functional (materials, equipment) innovation of a self-adjusting indenter assembly, which improves data repeatability by maintaining a steady pressure distribution over weeks of cycling.
- Reduce separator cracking risk by reproducing the failure using the custom tester to inform vendor's design mitigation.
- Unblock the pilot line in 2 days by analyzing separator debris contaminating the winder. Propel supplier's formulation change to minimize debris by innovating experiments that quantify debris release at various elongations.

HV Battery Mechanical Test Intern, *Tesla, Inc.,* Palo Alto, CA — May 2023 – Aug 2023
- Designed and executed a component-level experiment (DOE) to reduce 39%+ of cycle targets for battery current collector fuses on all vehicles by aggressively determining a reliability parameter.
- Saved 80% of sensor cost by reducing 88% of specialty thermocouples after proving thermal camera data credibility.
- Upgraded coupon design to accelerate failure by 2.5x after troubleshooting slow failure using Digital Image Correlation.

TECHNICAL LEADERSHIP EXPERIENCE

Battery Mechanical Design Lead & Team Mentor, *Penn Electric Racing*, Philadelphia, PA — Jan 2021 – Jan 2024
- Spearheaded technical design and program management of the team's 500V battery pack, leading 10 people to optimize every part for serviceability, safety, and manufacturability. Geared subsystem decision-making based on team priorities.
- Optimized mounting bracket geometry to reduce manufacturing time by 33% and weight by 0.7 lb.
- Expedited 6x integration time by facilitating cross-functional communication and controlling assembly tolerance.
- Compressed 43% of the battery manufacturing timeline by organizing dependencies and ensuring execution.
- Onboarded 5 rookies by defining priorities and providing technical reviews on 4 battery development projects.

OTHER EXPERIENCE

Teaching Assistant, *Materials Selection (MSE 393),* Philadelphia, PA — Jan 2024 – May 2024
- Enhanced homework fairness by standardizing the grading process. Hosted weekly recitations for 25 students.

Research Assistant (Physics Honors Program), *Bo Zhen's Experimental Physics Lab,* Philadelphia, PA — Nov 2022 – May 2024
- Graduated with an honors thesis on strong coupling between semiconductor materials and a photonic crystal slab.
- Enhanced success rate of material transfer from <10% to 70% by avoiding monolayer delamination on transfer medium.

Research Assistant, *Andrew Rappe's Computational Chemistry Group,* Philadelphia, PA — May 2021 – Dec 2022
- Developed a manuscript to improve benchmark accuracy for material modeling using density functional theory (DFT).
- Wrote Python and Bash code in Linux system to perform high-throughput statistical analysis on 3 million+ data points.

SKILLS

Characterization: Instron mechanical tests, SEM, DMA, DLS, Hardness test, DSC, XRD, AFM, and UV-Vis Spectroscopy.
Engineering: DFM, DFA, GD&T, Tolerance analysis, Finite element analysis (FEA), CNC machining, and Rapid prototyping.
Software: Proficient in Python, Solidworks, MATLAB, COMSOL, Java, Bash script, Linux server, and Excel.

HONORS

Alumna, *Tau Beta Pi Engineering Honor Society,* Philadelphia, PA
- Member of an engineering honor society that recognizes students with academic excellence and personal integrity.