

Summary

- ♦ Specialized in analysis of design-performance relationships with Python, MATLAB, and R
- ♦ Skilled in DOE testing and analysis of liquid-ion and solid-state materials and cells
- ♦ Extensive history of leadership, collaborations, and publications

Experience (3 of 6)

Research Scientist, A123 Systems Inc., Waltham, MA (January 2024 –Ongoing)

- ♦ Research into new formulations and slurry processing techniques to improve the performance of solid-state Li-ion cathode.
- ♦ Creation of metrics for electrode microstructure using hand-made Python scripts for automated SEM and EDS analysis.
- ♦ Development and root cause analysis of solid-state cell designs.

Chemiker, BELLA Labs, KIT/BASF, Leopoldshafen, DE (2022–Ongoing)

- ♦ Lead on synthesizing NCMs for project between BASF, U of Darmstadt, U of Manchester.
- ♦ In-lab manager of day-to-day operations, troubleshooting and delegating logistics.
- ♦ Electrochemical testing, SEM image analysis, and Rietveld refinement.

Ph.D. Candidate, M. Stefik Lab, U of SC, Columbia, SC (2017–2022)

- ♦ Tuned materials design and developed new analysis methods to connect structure and behavior.
- ♦ Designed and performed *in-situ* X-ray scattering measurements for a collaboration.
- ♦ 10 publications, 5 mentorships, 3 classes, 3 outreach programs, 3 club boards, lab safety officer.

Select Skills

Electrochemical Cell Preparation and Testing (MACCOR/BIOLOGIC)

- ♦ Preparation and testing of liquid and solid-state cells for diffusivity/resistance, rate, and cycle life.

Programming (Python/MATLAB/R)

- ♦ Author of +50 unique scripts for automated data extraction, electrochemical analysis, and plotting.

Active materials synthesis (Cathode and Anode)

- ♦ Development of sol-gel, solid-state, and molten salt chemistries for anode and cathode materials.

X-Ray Diffraction and Scattering (XRD/SAXS)

- ♦ *in-situ* diffraction, small-angle, grazing-incidence measurements, and use of Rietveld refinement.

Scanning Electron Microscopy (SEM)

- ♦ Top-down and cross-sectional SEM for quantitative analysis of nanomaterials and electrode microstructure using hand-made image analysis scripts.

IR and Raman Spectroscopy

- ♦ Familiarity with measurement and analysis of materials with FTIR and Raman spectroscopy.

Design of Experiment (DOE with JMP)

- ♦ Designed factorial to screen factors of nanomaterial design and industrial menthol crystallization.

Education

Ph.D.	Chemistry	U. of South Carolina (U of SC)	Columbia, SC	2022, May
B.S.	ACS Certified Chemistry	Hope College	Holland, MI	2017, May

