NATHAN LEBHERZ

Cell & Data Engineer

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PROFESSIONAL SUMMARY

Passionate Data and Cell Engineer with a track record of leading multifaceted projects in battery cell design, validation, and lab operations within high-complexity environments. Proficient in cell electrical testing, failure analysis, and collaborative efforts to evaluate cell characteristics with a deep understanding of battery materials, performance metrics, and inherent tradeoffs. Skilled in presenting findings to senior leadership and driving strategic innovations for continuous enhancement.

EDUCATION

Bachelor of Science in Chemical Engineering
2016-2020
Minor in Materials Science & Engineering, Concentration in Applied Physical Sciences
University of California, Berkeley

PROFESSIONAL EXPERIENCE

Senior Cell Test Engineer — Palo Alto, CA
Tesla, Inc — September 2022 - Present

- Lead engineer for for 2 lab locations overseeing 4000 cell test channels for cell abuse, characterization, and aging test methods
- Established cell test hardware validation process and created data pipeline with front-end, decreasing the time to validate new equipment from 23 to 4 hours with one button
- Created Github repository of analysis scripts to analyze, visualize, and validate cell electrical test data
- Designs and writes cell electrical test procedures including thermal runaway and propagation testing
- Developed strategies for testing electrolyte imbalance, post-formation electrolyte removal, and cell short detection in Lithium-Ion Batteries
- Analyzed battery reliability, performance, thermal runaway, and CT scan data for continuous battery improvement

Product Engineer — Milwaukee, WI
Clarios Power Solutions, LLC — June 2020 – August 2022

- Member of the College Graduate Rotational Program for a leading global supplier of lead-acid automotive batteries. The two-year program provided exceptional work experience covering all aspects of the battery lifecycle by completing four rotations in Product Testing, Chemical Process Development, Product Design, and Materials.
- Executed product deviation testing, risk analysis, and reprocessing strategies to develop solutions to mitigate $1.2M in on hold product. Created an automated Python and Power BI dashboard tool for proactive battery formation analysis.
- Selected to represent the Company on collaboration with Argonne National Labs to prototype and test Lead-Acid cells for research into life cycling characteristics. Formally recognized for timely completion of project deliverables.
- Provided in-plant support on a regular basis for new product launches, including rollout of advanced charge acceptance product portfolio.
- Proactively machined work tools for ergonomic safety and implemented shadow boards for 5S workspace initiative.
- Assembled and tested small scale battery cells by hand-pasting electrode recipes to validate and compare alternative battery components.

- Deconstructed lead-acid batteries to determine failure modes and benchmark comparisons on competitor products.
- Implemented new life-cycling tests and formation profiles by programming Arbin, MACCOR, and Bitrode rectifiers.

Special Process Engineering Intern — Rockford, IL
Woodward Inc. — May 2019 – August 2019

- Reduced production downtime by designing work tools and establishing test matrices to troubleshoot surface coating and heat treat processes.
- Identified unknown metals by performing Scanning Electron Microscopy (SEM), Energy Dispersive X-ray Spectroscopy (EDS), metallography, and hardness testing; performed quality analysis of production parts.
- Implemented Lean Six Sigma strategies to improve and create preventative maintenance guides, work instructions and audit templates in alignment with American Society for Testing & Materials (ASTM) and military (MIL) standards for efficient manufacturing of turbine components.

Organic Chemistry Laboratory Assistant II — Berkeley, CA
UC Berkeley College of Chemistry — January 2018 – December 2018

- Prepared chemical solutions, maintained hazardous waste, and performed test experiments to drive seamless operations for 48 undergraduate organic chemistry labs.
- Operated, analyzed, and distributed results from Nuclear Magnetic Resonance (NMR), Gas Chromatography (GC), and High-Performance Liquid Chromatography (HPLC) instruments for undergraduate research projects.

ENGINEERING & RESEARCH EXPERIENCE

Lead Software Developer — Remote
Third Coast Supply Company — May 2023 – Present

- Created an auction site for customers to bid on products listed by Third Coast. Website allows for mass product uploading, product pictures, and mobile interfacing. Over $1.2 million transacted to date.
- Developed the internal inventory system for the company to track and maintain all products. Functionality allows for barcode printing & scanning and Purchase Order & Invoice PDF generation.

Undergraduate Research Affiliate — Berkeley, CA
UC Berkeley Combustion Modeling Lab — April 2018 – May 2019

- Developed a MATLAB model for multi-species gas diffusion through a membrane to support graduate student projects investigating flame propagation in stratified fuel mixtures.
- Designed and conducted an experiment for quantitative measurements of local gas concentration to validate the model.

CORE COMPETENCIES

Cell Design | Computer Programming | Battery Assembly & Testing | Process Development
3D Modeling | Strategic Leadership | Risk Analysis | Research & Analysis | Lithium-Ion Electrical Tests
Test Protocols | Performance Analysis | Project Management | Cross-Functional Collaboration

TECHNICAL SKILLS

Python, MATLAB, SolidWorks, SQL, Github, Simulink, SEM, NMR, Metallography, COMSOL Multiphysics, Lean Six Sigma

References available