Arden Chen

Research Assistant / Software Engineer

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Self-motivated, ambitious, and detail-oriented chemical engineer seeking impactful and challenging roles in research and development, materials science, or process engineering. My passion is to help the world stop climate change, particularly by revolutionizing the energy industry and solving difficult problems. My experience in laboratory work prepares me well for fast-paced, ever-changing environments where team members are constantly adapting to new situations.

PROFESSIONAL EXPERIENCE

Battery Researcher at Washington University in St. Louis (2022 - 2025)

- Developed Python program to **automate data collection and analysis** for **operando laser interferometry experiment** to monitor electrodeposition
- Synthesized **$Na_3V_2(PO_4)_3$ (NVP) cathode material** using **spray dryer** for sodium-ion coin cells
- Analyzed battery cell performance using **electrochemical cycling, EIS, CV, GITT/PITT**, etc.
- Performed cathode material characterization and data analysis (**SEM, XRD, TGA, DSC, Raman**)
- Optimized **cathode slurry mixing procedure** for high-loading, high-performance sodium cells
- Developed **aqueous slurry processing** of high-loading NVP cathodes for **cheaper, greener production**, replacing NMP
- Modeled lithium-ion electrolyte kinetics using **molecular dynamics (MD) simulation**
- Refined **pouch cell fabrication** and **testing procedures** for consistency and efficacy

Publications/Presentations:

  - One-Pot Aqueous Synthesis of Hierarchical $Na_3V_2(PO_4)_3$ Particles for High-Performance Sodium Batteries (**Co-first Author, JES, 2025**). **DOI:** doi.org/10.1149/1945-7111/ade47c)
  - High-Loading $Na_3V_2(PO_4)_3$ Cathodes Via Aqueous Slurry Processing for Enhanced Sodium-Ion Battery Performance (**Poster, ECS Chicago 2025**)
  - High Performance $Na_3V_2(PO_4)_3$ (NVP) synthesis using a more sustainable spray-drying method (**Poster, WashU Undergraduate Research Symposium, 2023**)

Software Engineer at Stellar Services (2020 - 2025)

- Designed framework for **JATS and CRM web application** using **React, .NET and Sharepoint**
- Designed **corporate operations software** including for **fast, productive company structure**
- Programmed an **automated budget accounting system** to generate **easy-to-read reports**
- Developed machine learning model for **predictive maintenance project**
- Overhauled **judicial case management and enterprise maintenance system** using **React, C#**

EDUCATION

Washington University in St. Louis (2020-2024)

Bachelor of Science in Chemical Engineering

Relevant Coursework: Electrochemical Engineering, Fluid Dynamics, Green Engineering, Aerosol Measurement

SKILLS

Software: Aspen HYSYS, ArcGIS, Microsoft Suite, Solidworks, Sharepoint, Helioscope

Programming: MATLAB, Python, R, Java, Javascript, C++, C#, Rust, SQL, HTML, CSS, Simulink

Language: English (Fluent), Spanish, Chinese (Native conversational)