Arjun Sharma

arjun.sharma6251@gmail.com // +1 (908) 938-9498 // www.linkedin.com/in/arjun-sharma6251/

ChemE + Chemistry at Penn (4.0) building at the hardware-software seam. Operations Lead for a 140-person EV racing team (wrote the PRD for its first 4WD car; delivered REV11 72 days early); battery researcher at MIT and Penn (JACS submission); shipped three public science web apps.

EDUCATION

University of Pennsylvania, ***Vagelos Integrated Program in Energy Research (VIPER)***, Philadelphia, PA *Expected Grad. 05/28*
B.S.E. Chemical Engineering, B.A. Chemistry; Minor in Engineering Entrepreneurship | **GPA: 4.00/4.00**

LEADERSHIP & EXPERIENCE

Penn Electric Racing | *Operations Lead + Mechanical Subsystem (Accumulator/Battery)* *Sept 2024 - Present*

- Authored the PRD for REV12, the team's **first 4WD car in 8 years**, and led cross-functional decisions on cell selection, motor architecture, and pack design across mechanical, electrical, and software subteams from concept through procurement.
- Coordinated REV11 build scheduling and cross-team execution, delivering the car **72 days ahead of schedule** (fastest build in team history) and unlocking **150+ miles** of testing.
- Built a closed-loop purchasing system (Notion + Excel + Gmail) that tracks every order from request through approval, order and delivery, with **low-friction lead-time tracking** and **automated** price optimization; **cut request-to-order time 95%.**
- Built and drove adoption of **GenAI tools across the 140-person team**: a passive PM system that infers task status from CAD/Drive/Slack activity, a self-maintaining risk register, and PERBot (Slack→Notion meeting notes, context-aware chatbot, anonymous Q&A).
- Primary liaison for 20+ sponsors (Monster Energy, Siemens, Cadence); **built a 340+ prospect, ~$175K pipeline through a Slack-automated CRM**; independently manage the $120K budget and procurement.
- Introduced ownership tracking and mid-week reviews: **rookie contributions to weekly updates up ~70%**; weekly sponsor outreach **4x**.

Vagelos Integrated Program in Energy Research | *Program Operations Coordinator* *Sept 2025 - Present*

- Built a four-year course-planning app with an AI advising layer, adopted by VIPER students; **selected by administration to stress-test Penn's new Arts & Sciences curriculum**, informing future VIPER course policy.
- Designed and launched a project management system for VIPER administration, centralizing task tracking for the 100-student program.

INDEPENDENT PROJECTS

Valence | Adaptive Chemistry Olympiad Practice Platform (usevalence.app)

- Found that ~16,000 U.S. Chemistry Olympiad competitors practiced from static question banks with no explanations or progress tracking; launched a mobile-first adaptive platform that reached **nearly 100 users in 48 hours** with zero paid distribution.

Hectocycle | Battery Cell-Qualification Cockpit (hectocycle.com)

- Shipped a browser tool that predicts cell life-test outcomes from the first 100 cycles, so most tests can stop early: **100% held-out accuracy on the 76% of cells it calls**, with an uncertainty-aware "keep testing" path for the rest; validated on 193 LFP, NCA, and NMC cells.

Impedyn | EIS Analysis Web App (impedyn.vercel.app)

- Built a web app that automates EIS interpretation: fits equivalent-circuit models with confidence intervals, renders Nyquist/Bode/residual plots, and flags weak fits with AI diagnostics; **in user testing with electrochemists at MIT and Penn**.

RESEARCH EXPERIENCE

Research Assistant @ Mallouk Chemistry Lab | *University of Pennsylvania* *Sept 2024 - Present*

- Research diazonium-modified carbon felt electrodes for vanadium redox flow batteries; **raised VO_2^+/VO^{2+} rate constant 400%+**.
- Co-author, **manuscript submitted to JACS** (2026): optimized diazonium grafting reactions to tune carbon surface wetting across 8 aryl groups (~2.7x span in electron-transfer rate), and helped develop wetted-area model explaining why capacitance/kinetics track contact angle.

Research Assistant @ Yang Shao-Horn Lab (Electrochemical Energy Lab) | *MIT* *May 2026 - Aug 2026*

- Tested whether "high-entropy" Na-ion electrolytes are truly high-entropy: measured reaction entropy (ionic Seebeck coefficient) and bulk entropy (heat capacity, VFT/Kauzmann analysis), plus interfacial kinetics and Coulombic efficiency in cycled coin cells (CV, EIS).
- Built a Python pipeline turning raw CV/EIS files into iR-corrected j0, R0, and Eeq fits, automating Na-ion coin-cell kinetics analysis.

Research Assistant @ Chen Analytical Chemistry Lab | *NJIT* *Summer 2022 and Summer 2023*

- NSF-funded protein-structure project (MS + EC tags); raised reaction yield 60%; co-authored **2 peer-reviewed publications** (ACS Measurement Science Au; Encyclopedia of Analytical Chemistry).

AWARDS AND HONORS

- **1st/108 (2026), 2nd/90 (2025) FSAE EV Business Presentation.** Strategy-backed pitch rooted in financial modeling and scenario analysis.
- **2x United States National Chemistry Olympiad High Honors Finalist.** Placed within **the top 50 out of over 16,000 participants** in 2023 and 2024; individually recognized by NJ State Legislature. Received highest score on North Jersey local section exam.
- **63 Individual Science Olympiad Medals** across all levels of competition, including **three national championship golds in chemistry**.
- **National Merit Scholar and Valedictorian** (Rank 1/411). Awarded $2,500 scholarship as one of 2,500 finalists; GPA: 100.82/100-pt scale.

SKILLS

- **Technical:** Python, SQL, MATLAB, COMSOL, CAD, Excel; EIS and equivalent-circuit modeling; battery cycling data analysis.
- **Product & Ops:** PRDs, LLM-assisted prototyping, workflow automation (Notion, Slack, Gmail), budgeting, sponsor management.