

Paul Chen

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Professional Summary

Senior chemical engineer with deep expertise in membrane electrode assembly (MEA) development, scale-up, and manufacturing for PEM fuel cells and water electrolysis. Proven record of leading next-generation MEA, CCM, and catalyst innovations from concept through commercialization, delivering step-change improvements in performance, durability, and hydrogen crossover. Strong cross-functional leader with experience spanning R&D, process development, gigafactory build-out, and customer technical support.

Professional Experience

Ionomr Innovations — Boston, MA, USA

Senior R&D Engineer, MEA | Nov 2024 – Present

- Lead development of next-generation hydrocarbon MEAs for AEM electrolysis using proprietary MEA components, achieving **50% reduction in H₂ crossover** and **30% improvement in cell performance**.
- Spearheaded next-generation hydrocarbon MEAs for automotive PEM fuel cells, enabling **below-industry-average PGM loadings** and delivering **~20% voltage improvement**.
- Serve as technical consultant to clean-energy customers across Europe and Asia, supporting early-stage R&D, scale-up, and technology transfer.
- Collaborate with DOE institutions and external partners on ex-situ characterization, MEA optimization, and root-cause analysis of cell failures.

Electric Hydrogen — Natick, MA, USA

R&D Engineer, Catalyst Coated Membranes | Sep 2023 – Nov 2024

- Owned the product roadmap for next-generation CCMs for PEM electrolysis, driving programs from concept through commercialization while meeting aggressive timelines and deliverables.
- Established material characterization and screening methodologies to identify early scale-up failure modes and guide optimization of material formulations and processing methods.
- Evaluated and down-selected novel catalyst systems based on electrochemical performance and durability, resulting in **60% reduction in H₂ crossover** and **20% reduction in kinetic losses**.
- Mentored junior engineers and scientists, providing technical guidance and supporting professional development.

Senior Process Engineer, MEA | Jun 2022 – Sep 2023

- Led process-development roadmap for core MEA components (CCMs, porous transport layers, gas diffusion layers), mitigating manufacturing risks and resource constraints to meet all program milestones.

- Key contributor to the technical infrastructure for the company's first **gigawatt-scale manufacturing facility**, managing **>\$6M in capital equipment** including slot-die coaters,, slurry homogenizers, and high-temperature furnaces.
- Partnered with cross-functional stakeholders to develop product and process FMEAs for critical MEA components.

Ballard Power Systems — Burnaby, BC, Canada

Process Engineer, Catalyst Coated Membranes | Jul 2019 – May 2022

- Managed process-development programs to establish production-scale manufacturing methods for next-generation CCMs. - Co-developed a fully automated pilot plant (**>\$2M in capital equipment**) for CCM production, including P&ID development, mass balances, and equipment specifications.
- Acted as liaison between Quality, Supply Chain, and R&D to assess product/process maturity using various DOEs (Taguchi, Factorial) and to define critical paths for scale-up
- Performed rigorous statistical analysis using Six Sigma tools (SPC, DMAIC) to optimize processes, distinguish vital factors from noise, and establish robust process specifications. Utilized 8D and fish-bone to identify the root cause of production roadblocks.

GluStitch Inc. — Delta, BC, Canada

Manufacturing Specialist, Tissue Adhesives | Aug 2018 – May 2019

- Led manufacturing operations for medical-grade butyl and octyl cyanoacrylates in a cGMP-compliant environment.
- Operated pilot-scale equipment to produce polymer and monomer batches and conducted assays on process intermediates.
- Provided technical support by investigating and resolving equipment- and process-related issues.

Education

University of British Columbia, Vancouver, BC

Bachelor of Applied Science (BASc), Chemical Engineering (Co-op) | 2013 – 2018

Certifications

- ASQ Certified Six Sigma Green Belt (CSSGB)

Technical & Professional Skills

- **Project & Program Management:** MS Project, Monday, Confluence
- **Quality & Manufacturing Systems:** ISO, IATF, cGMP, FMEA
- **Engineering & Design Tools:** MS Visio, AutoCAD
- **Manufacturing and Operations Systems:** Oracle ERP, MES
- **Statistical & DOE Tools:** Minitab, Design-Expert