Jeremy Schnellhardt

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Profile

Nanotechnology Engineering student with hands-on experience in catalyst development, electrochemical systems, and aerospace. Team Lead of Waterloo Rocketry, managing a 100+ member technical team through design, fabrication, and testing. Experienced in experimental design, data automation, and stakeholder engagement, with published work and pending patents at the National Research Council. Combines technical depth with practical fabrication, systems integration, and cross-functional collaboration.

Skills

Software: SolidWorks (CSWA certified), ANSYS, COMSOL, MATLAB, Python, MS Office Suite, version control (Git/Kenesto/Bild), Microsoft Azure (AZ-900 & AI-900 certified)

Lab Experience: Spectroscopy (Raman, FTIR, UV-Vis, XRD, XPS), microscopy (SEM, AFM), thermal/surface analysis (DSC, TGA, BET, ellipsometry), electrochemistry (LSV, EIS), thin-film deposition & characterization, nanoparticle synthesis, catalyst development, photolithography, polymer & mechanical testing, circuit analysis & instrumentation (function generator, oscilloscope, 3-point probe), design of experiments, WHMIS, compressed gases, cryogenics, high-pressure systems, experiment optimization, automation

Fabrication: 3D printing, manual machining (lathe/mill), CNC & waterjet design, welding, brazing, soldering, composites (vacuum resin infusion), sheet metal work, woodworking

Professional Competencies: Failure analysis, root cause investigation, systems engineering, integration, rapid prototyping, technical communication, cross-functional collaboration, stakeholder engagement

Professional Experience

Team Lead 2023 Nov – Present
Waterloo Rocketry Waterloo, Ontario, Canada

- Led a 100+ member student engineering team through the design, fabrication, and flight of Borealis (Canada's first liquid bi-propellant rocket) and Aurora (2nd highest amateur liquid rocket flight globally, 16 ft tall, 11.5 kN engine, apogee 38,000 ft).
- Designed and optimized longerons (thrust columns) for Borealis using SolidWorks, ANSYS, and Excel-based calculations, achieving a 30% reduction in footprint and 10% increase in load capacity.
- Fabricated, assembled, and improved injector elements and interpropellant seals for Borealis's injectors, reducing leak rate by 15%.
- Directed logistics, stakeholder engagement, and construction for two rocket test sites, including thrust stand validation, blast shielding, and infrastructure upgrades, reducing costs by $2,000 and cutting construction time by 25%.
- Co-developed a Python-based automation tool to streamline CFD workflows in ANSYS, accelerating analysis for Borealis's active control system by 50%.
- Managed static fire tests and full-system integration campaigns, ensuring safety compliance and smooth coordination across subsystems, cutting test duration by 33%.

Electrochemical Systems Engineer 2024 Sep – 2025 Apr
National Research Council of Canada Mississauga, Ontario, Canada

- Synthesized, characterized, and optimized precious-metal-free catalysts for alkaline water electrolysis, meeting the U.S. D.o.Es Hydrogen Energy Earthshot initiative for 2026.
- Served as primary client liaison, presenting technical data in monthly reviews, leading lab tours, and ensuring effective collaboration with industry partner, securing a secondary project with the partner.
- Developed 2 novel catalysts currently pending Form 1 patents, and co-authored a paper on accelerated durability testing accepted by the *Canadian Journal of Chemistry*.
- Automated electrochemical data analysis using Python scripts, improving throughput by 60%.
- Applied design of experiments (DOE) methods to guide catalyst optimization, improving stability and efficiency by 20%.
- Nominated for Co-op Student of the Year for outstanding technical and leadership contributions.

Team Lead 2023 May – 2023 Aug | Virtual
Waterloo Experience Accelerate Program

- Led a cross-disciplinary student team to develop an AI email assistant to help older adults detect and avoid online fraud.
- Created project plans, milestones, and risk mitigation strategies that shortened delivery time by 10%.
- Reviewed technical deliverables for quality, safety, and alignment with project goals, identifying 90% of issues before implementation.

Education

Honours Nanotechnology Engineering 2022 – 2027 | Waterloo, Ontario, Canada
University of Waterloo