

# Nicholas Sabry

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## OBJECTIVE STATEMENT

Pursuing a career in mechanical or manufacturing engineering for product development. As a Ph.D. candidate in Mechanical Engineering, this pursuit is driven by a commitment to address challenging problems and contribute innovative solutions. The goal is to transition the comprehensive skill set acquired through industry-based academic research into applied industry solutions. This skill set encompasses proficiency in multiple programming languages, technical communication and writing, CAD/CAM software, and a combination of analysis methods and machining techniques. These competencies are aimed at solving engineering problems across various fields, bringing a principle's first view to evolving areas of product development.

## EXPERIENCE

- Research Engineer - High Performance Powertrain Materials Laboratory (HPPM)* May '20 — Present  
*Australian Nuclear Science and Technology (ANSTO) Research for Neutron Experiments* Aug.'23 — Jan.'24
- Advanced Friction Stir Welding (FSW) residual stress research with neutron diffraction providing weld sequence insights.
  - Systematically collected data on FSW speed parameters' impact on residual stress, microstructure, and aluminum (Al) fusion.
- The Minerals, Metals & Materials Society (TMS) Annual Meeting & Exhibition* Mar.'23
- Delivered two talks at TMS on FSW and residual stress to 50+ senior engineers, securing referrals and networking opportunities by leveraging professionally crafted animations to elucidate complex topics and sustain audience engagement.
- Nemak R&D and Oak Ridge National Lab (ORNL) Collaboration* May '20 — Aug.'22
- Facilitated an international liaison between Nemak R&D, ORNL, and Alabama production facility, leading to a strategic 40-page report that outlined methods to reduce distortion and enhance production efficiency on the Jeep Rubicon hybrid battery tray.
  - Report based on empirical evidence and data analysis collected at ORNL's user facility, driving decisions and recommendations.
  - Garnered supporting material insights through tensile testing, SEM, EBSD, optical imaging, and diffraction analyses methods.
- Engineering Intern - Tolko Industries Production Enhancement* Sep.'19 — Jun.'20
- Collaborated in a team, enhancing Tolko Industries' production processes, tripling fruit bin output to 90,000 annually.
  - Led motion study analysis, pinpointing improvements for safety and efficiency in manufacturing operations.
  - Redesigned final assembly, boosting operational efficiency, reducing production time, and cutting space requirements.
- Engineering Intern - Internal Combustion (IC) Engine Fitness-for-Service Research* May '18 — Aug.'18
- Completed Al alloy characterization at Lund Institute, evaluating next gen IC engine material by tensile and fatigue analysis.
  - Employed fractography methods; collected precipitation-strengthened Al alloy fracture data; defined ductility and toughness.
  - Conducted acoustic emission testing with tensile tests, aiding in understanding deformation in pre-elastic limit.
- Engineering Intern - Battery Innovation Project Assistant* Sep.'18 — Apr.'18
- Panasonic GA and Samsung 30Q battery cells cycling to measure performance degradation under varied usage conditions.
  - Analyzed data for patterns of performance loss to create efficient charging technologies to extend battery life.

## EDUCATION

- Ph. D. in Mechanical Engineering - University of British Columbia* May '20 — Apr.'24 (Expected Completion)
- Diss. "Stress Characterization for Friction-Stir-Welded Hybrid Electric Battery Trays with Application of Neutron Diffraction"
  - Teaching Assistant: Managed and coordinated a cohort of 140 students (provided TA hours, exam reviews, and grading).
- BASc in Mechanical Engineering - University of British Columbia* Sep.'16 — Apr.'20
- GPA: 3.9 / 4.0 with Distinction.
  - Courses: Applied Machine Learning, Alternative Energy Systems, High Power Electronic Converters for Power System Applications, Microelectromechanical Systems, Robot Modelling and Control, and Electric Circuits and Power.

## SKILLS

MATLAB, SolidWorks, SEM+EBSD Analysis, Lathe/Mill/Waterjet/Welding/3D Printing, Proficient Presenter and Communicator

## PROJECTS

### Arduino Bluetooth Drone

3D Printed, PID controlled, USB Host Shield connection interface, PS4 controller integration, 6050 MPU Gyro stabilization.

### Cast Plates Processing

Machined steel dies, rapid hot plate extraction, minimized turbulent flow, hot mold re-entry for successive plate castings.