

# Nicholas Sabry, Ph.D.

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## Summary

Mechanical engineer with extensive experience in manufacturing and welding technologies. Strong background in hands-on production environments, with proven expertise in problem-solving and process optimization. Seeking a full-time position as a Mechanical or Manufacturing Engineer to contribute to innovative engineering solutions and gain valuable industry experience.

## Skills

|               |                    |             |                      |                     |
|---------------|--------------------|-------------|----------------------|---------------------|
| SolidWorks    | FEA & SPH          | Waterjet    | Prototype Validation | Communication       |
| MATLAB        | OpenFOAM (CFD)     | Welding     | Quality Assurance    | Cross-Collaboration |
| Python        | Material Analysis  | CNC         | Root-Cause Analysis  | Problem Breakdown   |
| Arduino (C++) | Material Selection | Casting     | Technical Aptitude   | Project Management  |
| Thermo-Calc   | Lathe & Mill       | 3D Printing | Public Speaking      | Conflict Resolution |

## Experience

**R&D Mechanical Engineer**, University of British Columbia May 2022 – July 2024

- Optimized casting systems through iterative design, resolving temperature gradient issues and manufacturing defects
- Designed for manufacturing, assembling casting components from CNC water-jet-cut steel plates
- Developed a multi-welded process that reduced tensile residual stresses by 65%, lowering component defect rates
- Analyzed simulation data in Python to reduce temperature gradients and mitigate welding failures by 27%
- Revealed the unrecognized impact of material texture on residual stress by applying a first-principles approach
- Reduced neutron diffraction data analysis time by 200% through the development of new MATLAB code

**R&D Mechanical Engineer**, High Performance Powertrain Materials Laboratory May 2020 – April 2022

- Developed cost-effective methods to straighten battery trays, resolving production disruptions
- Resolved welding distortion issues for Nemaq, improving battery tray tolerance accuracy to 98%
- Led multinational nuclear experiments, coordinating industry, labs, and government funding

**Manufacturing TA**, University of British Columbia May 2020 – July 2022

- Led tutorials for 200 students, increasing exam scores by 10% with engaging teaching methods
- Achieved over 90% student satisfaction in feedback on learning improvement

**Materials Research Intern**, Lund University May 2019 – July 2019

- Enhanced material efficiency for next-gen engines, supporting research aligned with climate goals
- Collaborated with international teams, building strong multi-tasking and data analysis skills

## Education

**University of British Columbia** August 2024

Doctorate (Ph.D.) in Mechanical Engineering

- Accelerated from Master's program to Ph.D. by exceeding project goals beyond expectations
- Thesis Topic:** Development of Friction Stir Welding on Large Multi-Welded Components

**University of British Columbia** May 2020

Bachelor of Applied Science in Mechanical Engineering

- Graduated with Distinction | Cumulative GPA: 4.0

## Projects

**Production Enhancement**, Tolko Industries

- Redesigned facility layout, increasing output by 60% and reducing labor costs by 27%, increasing margins by \$72,000
- Optimized machine routing by 100% through lean manufacturing techniques, PLC, and VFD programming

**Quadcopter**, Personal

- Designed and 3D-printed modular upgrades, developing custom PID control software for self-leveling
- Calibrated sensors and integrated them into Arduino hardware, achieving precise positioning

**Hovercraft**, Robotics Competition

- Won 1st place out of 50 competitors by designing a hovercraft with 300% lift efficiency using optimized airflow

## Publications

- Sabry, N.**, et al. (2023). Characterization of microstructure and residual stress following the friction stir welding of dissimilar aluminum alloys. *CIRP Journal of Manufacturing Science and Technology*, 41, 365-379. <https://doi.org/10.1016/j.cirpj.2022.11.021>