

Bera Yavuz

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EDUCATION

Bachelor of Applied Science in Nanotechnology Engineering

University of Waterloo, Faculty of Engineering — Cumulative GPA: 3.95 / 4.00

Sept 2023 – Apr 2028

Waterloo, ON

SKILLS

Programming & Data: MATLAB, Python, serial communication, image & spectral analysis

Engineering Tools: SolidWorks, Inventor, Fusion 360, Onshape, Blender, Excel

Optics & Photonics: Optical system design, laser alignment, lenses, mirrors, dichroics, spectroscopy

Laboratory & Fabrication: XRD, ellipsometry, wet lab techniques, 3D printing, mill, bandsaw, drill press, CNC

EXPERIENCE

Mechanical R&D Intern

Jan 2026 – Apr 2026

Irradiant Technologies

Greater Boston, MA

- Designed and fabricated vibration-isolated optical enclosures, reducing noise and improving measurement stability
- Enabled an SPIE photonics west publication by CAD-modeling and Rendered a two-photon lithography optical setup
- Designed and CNC-machined a custom vacuum chuck to fixture proprietary scaffold materials for precision slicing.

Photolithography R&D Intern

Sept 2025 – Dec 2025

Irradiant Technologies

Greater Boston, MA

- Optimized photolithography exposure processes, improving resist performance and print uniformity
- Designed and manufactured mechanical components for printing and post-processing systems
- Developed software for 3-axis stage characterization, improving lithography alignment accuracy

Quantum Photonics R&D Assistant

Jan 2025 – Apr 2025

Institute for Quantum Computing (IQC)

Waterloo, ON

- Built custom optical assemblies for laser locking using DAVLL techniques
- Designed and 3D-printed fiber routing and amplifier mounts for complex optical setups
- Automated fine-structure splitting analysis using single-photon counting instrumentation

Quantum Photonics R&D Assistant

May 2024 – Aug 2024

Institute for Quantum Computing (IQC)

Waterloo, ON

- Developed MATLAB algorithms to detect nanostructures in experimental imaging data
- Automated experimental control via serial communication with piezo stages, lasers, and spectrometers
- Increased experimental throughput by 300×, enabling analysis of 174 quantum dots per hour

PROJECTS

NWQD Operating App — Quantum Dot Control System

May 2024 – Apr 2025

- Developed MATLAB application for controlling nanowire quantum dot experiments
- Authored system documentation and calibration procedures

Triboelectric Nanogenerator

Nov 2023 – Dec 2023

- Designed and built wind-powered triboelectric generator using reclaimed materials
- Achieved 1 V electrical output via triboelectric charge separation

PUBLICATIONS

A Low-Cost, Open-Access Two-Photon Lithography Tool

Jan 19th, 2026

- SPIE Photonics West - (Paper 13899-11)

Finding the Perfect Quantum Dot for a Quantum Repeater

Jul 18th, 2025

- SPIE Photonics for Quantum - Proceedings Volume 13563, Photonics for Quantum 2025; 1356305 (2025)
<https://doi.org/10.1117/12.3063250>

AWARDS

Paul B. Spafford Entrance Scholarship

June 2023

- Awarded to two outstanding first-year Nanotechnology Engineering students

Stanford Fleming Foundation Re-Engineering Award (2nd Place)

Nov 2024

- Recognized for innovative functional enhancements to existing technology