

Raymond Preble

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Education

Rochester Institute of Technology

Rochester, NY

B.S. Electrical Engineering, Minor in Music & Technology

Expected May 2030

- GPA: 4.00/4.00 – Dean's List – RIT Honors Program
- **Honors:** Bausch & Lomb Honorary Science Award, University of Rochester
- **Coursework:** Circuits I, Digital Systems I, Differential Equations, Computational Problem Solving (C). *In progress:* Circuits II, Digital Systems II, Semiconductor Devices, Advanced Programming.
- **Available for a Summer-Fall 2027 co-op**

Research Experience

Undergraduate Researcher

Summer 2026 – Present

RIT NanoPower Research Laboratories, Hubbard Group

Rochester, NY

- Rebuilt a non-working optical bench into a working non-contact system that measures relative ERE and PLQY in GaAs and perovskite solar cells using a 532 nm laser.
- Derived the system's correction factor from first principles, accounting for the light lost at every mirror, lens, and filter between the laser and the detector.
- Wrote a Python script deriving ERE from detailed balance: blackbody photon flux integrated above the band gap for the radiative saturation current, then ERE from the quasi-Fermi level splitting offset.
- Authored the bench's SOP and rebuilt its acquisition software so other researchers can run it unassisted, covering setup, Class 3B laser safety, and measurement for III-V and perovskites.
- Now redesigning the system with collaborators to measure absolute ERE.

Research Intern

Summer 2024

RIT NanoPower Research Laboratories, Hubbard Group

Rochester, NY

- Automated the bench's first measurement routine over GPIB and USB (SCPI), replacing manual operation.
- Extended photoluminescence (PL) mapping software for wafer defect screening and lunar dust studies.

Experience

IT Support Technician

July 2025 – August 2025

Pittsford Central School District

Pittsford, NY

- Guided students and staff through 1:1 laptop setup and de-escalated frustration over rollout delays.

Audio Visual Technician

August 2023 – Present

Christ Church Pittsford

Pittsford, NY

- Operate and troubleshoot live sound and video for weekly streamed services reaching 100+ attendees.

Projects

5-Bit Serial Adder–Subtractor – Quartus Prime, ModelSim – EEEE 120

Fall 2025

- Designed an FSM-controlled circuit adding or subtracting 5-bit numbers, verified exhaustively in ModelSim.

DTMF Tone Generator – C – CMPR 271 Final Project

Spring 2026

- Wrote a command-line C program synthesizing DTMF tones into 16-bit, 44.1 kHz WAV files.

Technical Skills

Hardware & Instrumentation: SR830 lock-in amplifier, Keithley 2400 source measure unit, Ocean Insight QE Pro spectrometer, Thorlabs PDA200C photodiode amplifier, Elliptec ELL9 and Thorlabs KDC101 motorized positioners, optical choppers, solar simulator, Class 3B laser alignment, knife-edge profiling, PL/ERE/PLQY and quantum efficiency characterization

Software & Programming: Python (NumPy, SciPy, PySerial, DearPyGui), C, C++, VHDL, Verilog, Quartus Prime, ModelSim, Windows 11 imaging

Communication Protocols: Standard Commands for Programmable Instruments (SCPI), General Purpose Interface Bus (GPIB), Virtual Instrument Software Architecture (VISA), RS-232 serial, USB instrument automation