WILLIAM ROBERTS

william_roberts@brown.edu | (401)-465-3114

EDUCATION

Brown University Providence, RI

BS, Chemistry, GPA: 3.95, Magna Cum Laude (May 2026)

- **Relevant Courses**: Organic Chemistry I-II, Inorganic Chemistry, Quantum Chemistry, Organometallics, Nanomaterials, Graduate Quantum Mechanics, Graduate Thermodynamics, Computational Chemistry, Statistical Mechanics

University of Edinburgh Edinburgh, Scotland

Study Abroad: Graduate Analytical Chemistry (Jan 2025 – May 2025)

SKILLS

- **Instrumentation**: Vacuum Systems, Cryogenic Systems, Galvanometric Mirrors, Ultrafast Optics, ICP-OES, Data Acquisition
- **Experimental Design:** Spectroscopy, Analytical Chemistry, Optical Design, Circuitry, Pulse Synchronization
- **Software**: LabVIEW, Python, Gaussian, Avogadro

EXPERIENCE

Undergraduate Researcher - Sprague-Klein Group (June 2025 – Present)

Brown University

- Wrote senior thesis: "*On the Method Development and Experimental Design of Ultrafast Stimulated Raman Scanning Microscopy*"
- Designed and aligned the optical path and focusing of a ~60fs beam, automated and synchronized numerous instruments using a self-designed LabVIEW program and developed a pulse synchronization scheme on ultrafast timescales.

Research Assistant (June 2025 – Aug 2025)

Elemental Enzymes

- Developed an experimental assay to determine trace element concentrations in living tissue via spectroscopic analysis
- Designed experimental procedure for sample preparation, utilization of ICP-OES system, and analysis of subsequent spectra/data, attaining 95% accuracy rate in rare metal detection

Undergraduate Researcher - Wang Group (June 2023 - Dec 2024)

Brown University

- Acquired and interpreted photo-electron spectra using custom cryogenically cooled anionic photo-electron apparatus in the Lai-Sheng Wang Group.
- Developed expertise in gas-phase spectroscopy techniques, including high-vacuum systems, optics alignment, and cryogenic ion cooling; supported data acquisition and analysis for two publications.

PUBLICATIONS

- J. Kang, *et al* (2025). "Photoelectron and Photodetachment Spectroscopy of Cryogenically-Cooled 2-Anthrolide Anion," *Journal of Chemical Physics*, 162(19), 194302, https://doi.org/10.1063/5.0269928**.**
- E. Brewer, *et al* (2025) "High Resolution Photoelectron Spectroscopy of 3-Nitrophenol Mediated by a Dipole Bound State," *Journal of American Chemistry, In Preparation.*

TEACHING EXPERIENCE

Undergraduate Tutor (Jun 2023 - Jun 2026)

Brown University

- Taught General Chemistry, Organic Chemistry, Physics to 40+ students total.
- Lectured and workshopped on a weekly basis for up to 6 students in several subjects, helping them through the difficult aspects of the natural sciences.

Head Undergraduate Teaching Assistant (Aug 2025 - Dec 2025)

Brown University

- Led weekly recitations, review sessions, and office hours; designed and graded problem sets for 200+ students in General Chemistry (CHEM 0330).
- Oversaw and managed a team of undergraduate Tas

AWARDS

- Sigma Xi Member
- American Chemical Society Undergraduate Physical Chemistry Award
- Undergraduate Teaching and Research Award