

Wei Zhu

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Profile

Experimental nanophotonics Ph.D. candidate with hands-on experience in two-photon lithography, ion implantation, PL/TRPL characterization, nanofabrication equipment maintenance, and FDTD simulation using MEEP and Lumerical.

Education

Western University Expected Jun. 2028
Ph.D. Candidate, Physics London, ON, Canada

- Supervisors: Dr. Lyudmila Goncharova and Dr. Eric Johlin; topic: broadband 3D nanophotonic structures.

Western University 2022–2024
M.Sc., Physics London, ON, Canada

- Supervisors: Dr. Lyudmila Goncharova and Dr. Eric Johlin; report: “Enhancing Photoluminescence Performance of Silicon Quantum Dots by Using Nanolens.”

University of Toronto 2017–2022
Honours B.Sc., Physics Specialist; Minor in Mathematics Toronto, ON, Canada

- Conferred June 2022 with High Distinction; cumulative GPA: 3.69.

Research and Technical Experience

Nanofabrication Facility Technician, Western University Aug. 2025–Current
Western Nanofabrication Facility London, ON, Canada

- Maintain nanofabrication equipment and support reliable instrument operation for research users.

Ph.D. Researcher, Western University Current
Departments of Physics and Astronomy; Mechanical and Materials Engineering London, ON, Canada

- Under the supervision of Dr. Lyudmila Goncharova and Dr. Eric Johlin, develop experimentally feasible 3D nanophotonic structures for broadband imaging, beam shaping, focusing, and pupil engineering.
- Combine two-photon-lithography process constraints, optical characterization, and FDTD simulation using MEEP and Lumerical.

M.Sc. Researcher, Western University 2022–2024
Silicon quantum dots and nanolens-enhanced photoluminescence London, ON, Canada

- Under the supervision of Dr. Lyudmila Goncharova and Dr. Eric Johlin, fabricated and characterized TPL nanolenses for ion-implanted silicon quantum dots in fused silica.
- Reported simulated directivity of 85.9 and measured enhancement of 5.9x–21.0x; trained users on steady-state PL and TRPL systems.

Summer Researcher, AP2D Group, University of Toronto 2021
Department of Electrical and Computer Engineering Toronto, ON, Canada

- Under the supervision of Prof. Nazir Kherani, investigated plasmonic SERS platforms using e-beam deposition, sputtering, and Raman spectroscopy.

Supervised Study Student, Beijing National Laboratory for Condensed Matter Physics 2020
Chinese Academy of Sciences Beijing, China

- Under the supervision of Prof. Jiangang Guo, studied PPMS and Raman spectrophotometry for material-property analysis and optical spectroscopy.

Publications and Manuscripts

- Wei Zhu**, Lyudmila V. Goncharova, and Eric Johlin. “Passive Axial Confinement in Two-Photon Lithography with a 3D-Printed Pupil Filter.” Under review at *Optics Express*.
- Wei Zhu**, Lyudmila V. Goncharova, and Eric Johlin. “From Planar to 3D Nanophotonic Lenses: Advancing Design, Fabrication, and Applications.” Under review at *Laser & Photonics Reviews*.
- Leila Mehrvar, **Wei Zhu**, Zekun Wang, Darian Modasi, and Eric Johlin. “Control of temporal and spatial proximity effects in two-photon lithography.” *Additive Manufacturing* 110 (2025): 104902. doi:10.1016/j.addma.2025.104902.

4. Yihong Liu, Jiawei Sun, Yingying Jiang, Giovanni Fanchini, **Wei Zhu**, Lyudmila V. Goncharova, and Lijia Liu. “Multiband MgGeO₃-Based Persistent Luminescent Nanophosphors for Dynamic and Multimodal Anticounterfeiting.” *ACS Applied Nano Materials* 7, no. 10 (2024): 11541–11552. doi:10.1021/acsanm.4c01069.

Presentations

- Poster, Photonics North 2026: nanolens-enhanced silicon quantum-dot photoluminescence. Best Poster Presentation Award.

Teaching and Mentoring

Teaching Assistant, Western University	2022–Current
Physics and Astronomy; Integrated Science	London, ON, Canada

- Led labs and tutorials across eight 140-hour Fall/Winter TA terms (1,120 appointed hours), covering First-Year Physics Labs, PHYSICS 1101/1102, 1201, 1401/1402, 2910, 3900, and Integrated Science 3001G; completed marking and proctoring duties.
- Guided two fourth-year thesis students; recipient of the Department of Physics and Astronomy Teaching Assistant Award.
- Judged undergraduate poster presentations as a PhUnC (Physics Undergraduate Conference) Poster Judge, Western University, 2025 and 2026.

Awards

2026	Best Poster Presentation Award, Photonics North 2026.
2025–2026	Lillian Margaret & Walter David Jackson Scholarship in Physics, Western University.
2024–2025	Department of Physics and Astronomy Teaching Assistant Award, Western University.
2022	Honours Bachelor of Science conferred with High Distinction, University of Toronto.
2021	Advanced Photovoltaics-Photonics and Devices Group Summer Research Fellowship, University of Toronto.
2020	Innis College Exceptional Achievement Award, University of Toronto.
2018–2021	Dean’s List, University of Toronto.

Technical Skills

Programming	Python, C++, MATLAB.
Fabrication	Two-photon lithography, ion implantation, e-beam deposition, sputtering, silicon quantum dots, fused silica.
Characterization	Photoluminescence and TRPL, Raman spectroscopy, SEM inspection, PPMS, nanofabrication equipment maintenance.
Simulation	FDTD using MEEP and Lumerical; Tidy3D, Zemax, nanophotonic lens design, pupil engineering, beam-shaping analysis.