Michael Dobinson

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EDUCATION

09/2022 – present **PhD in Physics** *(Expected 08/2026)*
Simon Fraser University | GPA: 4.0
Supervisor: Prof. Stephanie Simmons
Committee: Prof. Daniel B. Higginbottom, Prof. David Broun

- Thesis topic: Diode-integrated silicon T centres for quantum technologies

09/2020 – 04/2022 **MASc in Electrical and Computer Engineering**
University of Victoria | GPA: 8.8/9.0
Supervisor: Prof. Reuven Gordon

- Thesis titled "A route to erbium-doped nanocrystals as a single photon source using double nanohole optical tweezers"

09/2013 – 08/2018 **BEng in Electrical Engineering**
University of Victoria | GPA: 8.15/9.0

RESEARCH EXPERIENCE

09/2022 – present **Research Assistant,** Silicon Quantum Technology Lab
Simon Fraser University
Supervisor: Prof. Stephanie Simmons

- Researching silicon-based quantum technologies with focus on integrating the 'T centre' silicon defect with *p-i-n* diodes, developing hybrid optical/electrical control techniques.

09/2020 – 04/2022 **Research Assistant,** Nanoplasmonics Research Group
University of Victoria
Supervisor: Prof. Reuven Gordon

- Conducted research on erbium-doped nanoparticles using plasmon-enhanced optical tweezers to isolate single-emitters and evaluate their properties as a novel quantum light source.

TEACHING EXPERIENCE

05/2025 – 08/2025 **Laboratory Teaching Assistant,** Simon Fraser University
PHYS 133: Physics Laboratory II (05/2025 – 08/2025)

- Duties included assisting and providing feedback to students in lab sessions, marking projects and reports. Overall student evaluation rating: 3.65/4.0

09/2021 – 04/2022 **Laboratory Teaching Assistant,** University of Victoria
ECE 355: Microprocessor-Based Systems (09/2021 – 12/2021)
ECE 320: Electronic Devices I (01/2022 – 04/2022)

- Duties included assisting and providing feedback to students in lab sessions, marking projects and reports. Overall student evaluation rating: 3.81/4.0

PROFESSIONAL EXPERIENCE

09/2022 – present **Research Assistant** (Part-time)
Photonic Inc., Coquitlam, BC

- Part-time research and lab work related to developing quantum technologies based on the silicon T centre.
- Assisted with assembly work including fibre splicing, custom PCB/optics enclosures, and RF amplifiers.

08/2018 – 07/2020 **Hardware Engineer** (EIT)
Kobelt Manufacturing Co. Ltd., Surrey, BC

- Designed embedded electronic systems for marine steering applications including functional design, circuits, and PCB layout.

01/2016 – 04/2017 **Hardware Developer** (Co-op)
LineSpect, Richmond, BC

- Designed electronic systems for power line inspection drones including sensors and power distribution.

09/2015 – 12/2015 **Embedded Software Engineer** (Co-op)
Delta-Q Technologies, Burnaby, BC

- Developed methods to evaluate battery state-of-health during charging using machine learning. Developed firmware in an Agile environment.

PUBLICATIONS

1. C. Bowness, S. A. Meynell, **M. Dobinson**, C. Clear, K. Jooya, N. Brunelle, M. Keshavarz, K. Boos, M. Gascoine, S. Taherizadegan, C. Simon, M. L.W. Thewalt, S. Simmons, D. B. Higginbottom, "Laser-induced spectral diffusion and excited-state mixing of silicon T centers," *PRX Quantum*, vol. 6, no. 3, p. 030353, Sep. 2025, doi: 10.1103/9dxr-gfqf.
2. **M. Dobinson**, C. Bowness, S. A. Meynell, C. Chartrand, E. Hoffmann, M. Gascoine, I. MacGilp, F. Afzal, C. Dangel, N. Jahed, M. L.W. Thewalt, S. Simmons, D. B. Higginbottom, "Electrically triggered spin–photon devices in silicon," *Nat. Photon.*, vol. 19, no. 10, pp. 1132–1137, Sep. 2025, doi: 10.1038/s41566-025-01752-8.

3. A. L. Frencken, **M. Dobinson**, Z. Sharifi, E. H. Toodeshki, R. Gordon and F. C. J. M. van Veggel, "Photochemical Anchoring of Singly Er^{3+} Ion-Doped $NaYF_4$ Nanoparticles for Scalable Fabrication of Single-Photon Emitting Devices: Implications for Quantum Light Sources in the Telecom Window," *ACS Appl. Nano Mater.*, vol. 6, no. 6, pp. 4398–4405, Mar. 2023, doi: 10.1021/acsanm.2c05483.
4. **M. Dobinson**, "A route to erbium-doped nanocrystals as a single photon source using double nanohole optical tweezers," M.A.Sc thesis, University of Victoria, Apr. 2022, doi: 1828/13900.
5. G. Hajisalem, E. Babaei, **M. Dobinson**, S. Iwamoto, Z. Sharifi, J. Eby, M. Synakewicz, L. S. Itzhaki, R. Gordon, "Accessible High-Performance Double Nanohole Tweezers," *Opt. Express*, vol. 30, no. 3, p. 3760, Jan. 2022, doi: 10.1364/OE.446756.
6. R. Gordon and **M. Dobinson**, "Plasmonics-mine the gap: opinion," *Opt. Mater. Express*, vol. 11, no. 7, pp. 2192–2196, Jun. 2021, doi: 10.1364/OME.430547.
7. Z. Sharifi, **M. Dobinson**, G. Hajisalem, M. S. Shariatdoust, A. L. Frencken, F. C. J. M. van Veggel, and R. Gordon, "Isolating and enhancing single-photon emitters for 1550 nm quantum light sources using double nanohole optical tweezers," *J. Chem. Phys.*, vol. 154, no. 18, p. 184204, May 2021, doi: 10.1063/5.0048728.

CONFERENCE PUBLICATIONS

1. Z. Sharifi, **M. Dobinson**, G. Hajisalem, A. L. Frencken, F. C. J. M. van Veggel, and R. Gordon, "Enhancing and Isolating Lanthanide-Doped Nanocrystals Using Double Nanohole Optical Tweezers for Quantum Light Sources at 1550 nm," in *2021 IEEE 16th Nanotechnology Materials and Devices Conf. (NMDC)*, Jan. 2022, pp. 1–4, doi: 10.1109/NMDC50713.2021.9677544.
2. M. S. Shariatdoust, **M. Dobinson**, G. Hajisalem, and R. Gordon, "Hexagonal Boron Nitride Second Harmonic Generation Using Gold Nanorods with Continuous Laser Source," in *2021 IEEE 16th Nanotechnology Materials and Devices Conf. (NMDC)*, Jan. 2022, pp. 1–4, doi: 10.1109/NMDC50713.2021.9677498.
3. Z. Sharifi, **M. Dobinson**, G. Hajisalem, A. L. Frencken, F. C. J. M. van Veggel, and R. Gordon, "Upconversion Nanocrystal Emission Rate Enhancement Using Double Nanoholes," in *Proc. SPIE 11798: Optical Trapping and Optical Micromanipulation XVIII*, Aug. 2021, pp. 184–188, doi: 10.1117/12.2594280.

PROFESSIONAL PRESENTATIONS

1. **M. Dobinson**, C. Bowness, S. A. Meynell, C. Chartrand, E. Hoffmann, M. Gascoine, M. L. W. Thewalt, D. B. Higginbottom and S. Simmons, "Electrically injected telecom single photon source with a spin-photon interface in silicon," presented at the APS Global Physics Summit 2025, Anaheim, CA, USA, Mar. 18, 2025.
2. **M. Dobinson**, M. Gascoine, C. Bowness, E. Hoffmann, C. Chartrand, Y. Ackermann, M. L. W. Thewalt, D. Higginbottom and S. Simmons, "Electrically Injected T Centre Emission," presented at the International Conference on the Physics of Semiconductors (ICPS) 2024, Ottawa, ON, Canada, Aug. 1, 2024.

3. Z.Sharifi, **M. Dobinson,** G. Hajisalem, A. L. Frencken, F. C. J. M. van Veggel and R. Gordon, "Enhancing and Isolating Lanthanide-Doped Nanocrystals Using Double Nanohole Optical Tweezers for Quantum Light Sources at 1550 nm," presented at *2021 IEEE 16th Nanotechnology Materials and Devices Conf. (NMDC)*, Vancouver, BC, Canada, Dec. 14, 2021.

POSTER PRESENTATIONS

1. **M. Dobinson**, C. Bowness, S. A. Meynell, C. Chartrand, E. Hoffmann, M. Gascoine, M. L. W. Thewalt, S. Simmons, and D. Higginbottom, "Electrically-triggered spin-photon devices in silicon," presented at *Quantum BC Research Day 2025*, Burnaby, BC, Canada, April 25, 2025.
2. **M. Dobinson,** C. Chartrand, Y. Ackermann, C. Bowness, M. Kazemi, M. L. W. Thewalt, D. Higginbottom, and S. Simmons, *"*Diode-integrated silicon T centres for quantum technologies," presented at *International Summer School in Quantum Technologies (ISSQT) 2023*, Birmingham, UK, Aug. 7, 2023.
3. **M. Dobinson,** C. Chartrand, C. Clear, Y. Ackermann, M. L. W. Thewalt, D. Higginbottom, and S. Simmons, *"*Electrical Injection of the Silicon T Centre: A Path to Integrated Quantum Photonics," presented at *2023 SFU Physics Poster Competition*, Burnaby, BC, Canada, Mar. 31, 2023.
4. **M. Dobinson** and R. Gordon, *"*Nanoaperture optical fiber tweezers fabricated with a low-cost colloidal pattern transfer method," presented at *The 16th International Conference on Near-Field Optics, Nanophotonics and Related Techniques (NFO16)*, Victoria, BC, Canada, Sep. 1, 2022.

PATENT APPLICATIONS

1. D. Higginbottom and **M. Dobinson**, inventors; Photonic Inc., assignee. "Heralded Spin Initialization", US Provisional Patent Application No. 63/711,077 filed on October 10, 2024.

EXTRACURRICULAR AND VOLUNTEER EXPERIENCE

2021 – 2022 **Vice President**, UVic OSA Student Chapter
2015 – 2017 **Embedded Systems Lead**, UVic AERO Student Team

PROFESSIONAL MEMBERSHIPS

2021 – present **Member**, OSA
2021 – present **Member**, SPIE
2021 – present **Member**, IEEE
2018 – present **EIT**, Engineers and Geoscientists BC

AWARDS

2025 Quantum BC Research Day 2025 Poster Prize – $100
2023 ISSQT 2023 Poster Competition Prize – £250

2021 University of Victoria ECE Teaching Assistant Excellence Award

SCHOLARSHIPS

2025 SFU Quantum Travel Award – $750
2023 – 2025 SFU PhD Research Scholarship – $13,294
2023 SFU Travel & Research Award – $1,700
2022 – 2025 SFU Graduate Fellowship – $8,200
2020 British Columbia Graduate Scholarship (BCGS) – $15,000
2020 – 2022 University of Victoria Graduate Fellowship – $24,000/yr
2013 – 2018 University of Victoria Excellence Scholarship – $26,000
2013 University of Victoria Dean's Entrance Scholarship – $2,000

CERTIFICATIONS

2017 **ISED Canada,** Amateur Radio Operator, Advanced (VA7GND)
2015 **ISED Canada,** Amateur Radio Operator, Basic with Honours (VA7GND)