Nicholas S. Yama

Curriculum Vitae

nsyama@berkeley.edu
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Professional Training

IC Postdoctoral Fellow 2026–Present
University of California Berkeley (Berkeley, CA)
Advisor: Professor Alp Sipahigil

Ph.D. in Electrical Engineering 2025
University of Washington (Seattle, WA)
Advisor: Professor Kai-Mei C. Fu
Thesis: Hybrid-integrated photonics platform for quantum networks based on defects in diamond

B.S. in Electrical Engineering; Minor in Physics 2020
University of Hawai'i at Mānoa (Honolulu, HI)
Summa Cum Laude

Research Experience

Postdoctoral Researcher 2026–Present
Supervisor: Prof. Alp Sipahigil University of California Berkeley
IC Postdoctoral Fellowship

Theory, design, and experimental investigation of novel devices with enhanced electro-optic nonlinearities for quantum transduction.

Graduate Researcher 2020 – 2025
Supervisor: Prof. Kai-Mei C. Fu University of Washington
NSF Graduate Research Fellowship

Engineering, modeling, and theory of light-matter interactions in hybrid-integrated photonic devices coupled to optically active spin defects in diamond. Design, fabrication, and testing of photonic devices in novel materials platforms. Study of diamond defect physics.

Undergraduate Researcher 2017 – 2020
Supervisors: Prof. Wayne A. Shiroma, Prof. Aaron T. Ohta University of Hawai'i at Mānoa

Engineering of reconfigurable RF electronics using liquid-metals. Characterization of materials utilized in liquid metal devices.

REU Student 2018 – 2019
Supervisor: Prof. Vinod M. Menon City College of New York
Columbia University MRSEC REU

Characterization of light-matter interactions in two-dimensional materials coupled to optical cavities.

Awards

IC Postdoctoral Fellowship 2025–2027
Two years of funding for postdoctoral research.

UW NanoES Student Scientific Achievement Award 2025
Recognizes graduate students who have demonstrated extraordinary productivity in research and scholarship in nanoengineering and have contributed meaningfully to the scientific community. [article link]

National Science Foundation Graduate Research Fellowship 2020
One of 59 electrical engineering students nationwide selected in the 2020 cycle. [article link]

Outstanding Graduating Senior (EE) Spring 2020
Outstanding graduating senior for UH Mānoa EE Spring 2020 class. [article link]

Association of Old Crows Spectrum Warrior Scholarship 2018, 2019
Awarded for meritorious electromagnetic spectrum research.

UROP Funding for "Droplet Generation" Project 2018
Funding for droplet microfluidics project awarded by the University of Hawai'i's Undergraduate Research Opportunities Program.

University of Hawai'i Regents Scholarship 2016
The highest-level merit scholarship awarded to approximately 20 students per matriculating class.

University of Hawai'i Band Achievement Scholarship 2016
Awarded by music audition (trumpet).

Publications

Google Scholar link (estimated h-index: 9; * denotes equal contribution)

Refereed Journal Articles

13. **N. S. Yama**, C.-C. Wu, F. Hatami, and K.-M. C. Fu, "Efficient spin-photon interactions in a scalable nanophotonic platform," *Opt. Quantum* **4**(5), 511–517 (2026)
12. I.-T. Chen, **N. S. Yama**, H. Deng, Q. Lin, Y. Yue, A. Saxena, A. Majumdar, K.-M. C. Fu, and M. Li, "Intermodal microwave-to-optical transduction using silicon-on-sapphire optomechanical ring resonator," *Sci. Adv.* **11**(37), eadx6485 (2025)
11. H. Li, D. Acil, A. M. Boyce, **N. S. Yama**, C. Pederson, S. Chakravarthi, K.-M. C. Fu, M. H. Mikkelsen, "Room-Temperature Picosecond Single-Photon Emission from a Silicon Vacancy Center in Diamond," *ACS Nano* **19**(20), 19310–19317 (2025)
10. C. Pederson*, **N. S. Yama***, L. Beale, M. L. Markham, K.-M. C. Fu, "Rapid, in-situ neutralization of nitrogen- and silicon-vacancy centers in diamond using above-band-gap optical excitation," *Nano Lett.* **25**(2), 673–680 (2025)
9. A. D. Logan*, **N. S. Yama***, and K.-M. C. Fu, "Selective active resonance tuning for multi-mode nonlinear photonic cavities," *Opt. Express* **32**, 13396-13407 (2024)
8. A. M. Boyce, H. Li, N. C. Wilson, D. Acil, A. Shams-Ansari, S. Chakravarthi, C. Pederson, Q. Shen, **N. Yama**, K.-M. C. Fu, M. Loncar, and M. H. Mikkelsen "Plasmonic Diamond Membranes for Ultrafast Silicon Vacancy Emission," *Nano Lett.* **24**(12), 3575-3580 (2024)
7. **N. S. Yama***, I.-T. Chen*, S. Chakravarthi, B. Li, C. Pederson, B. E. Matthews, S. R. Spurgeon, D. E. Perea, M. G. Wirth, P. V. Sushko, M. Li, K.-M. C. Fu, "Silicon-Lattice-Matched Boron-Doped Gallium Phosphide: A Scalable Acousto-Optic Platform," *Adv. Mater.* **36**, 2305434 (2024)
6. Y. Han, C. Pederson, B. E. Matthews, **N. S. Yama**, M. F. Parsons, K.-M. C. Fu, "Creation of color centers in diamond by recoil implantation through dielectric films," *Appl. Phys. Lett.* **124**(4), 044007 (2024)
5. M. Khatoniar, **N. Yama**, A. Ghazaryan, S. Guddala, P. Ghaemi, K. Majumdar, and V. Menon, "Optical Manipulation of Layer-Valley Coherence via Strong Exciton-Photon Coupling in Microcavities," *Adv. Optical Mater.* **11**, 2202631 (2023)
4. S. Chakravarthi*, **N. S. Yama***, A. Abulnaga, D. Huang, C. Pederson, K. Hestroffer, F. Hatami, N. P. de Leon, K.-M. C Fu "Hybrid integration of GaP photonic crystal cavities with silicon-vacancy centers in diamond by stamp transfer," *Nano Lett.* **23**(9), 3708 (2023)
3. A. D. Logan, S. Shree, S. Chakravarthi, **N. Yama**, C. Pederson, K. Hestroffer, F. Hatami, and K.-M. C. Fu, "Triply-resonant sum frequency conversion with gallium phosphide ring resonators," *Opt. Express* **31**, 1516-1531 (2023)
2. S. Guddala, M. Khatoniar, **N. S. Yama**, W. Liu, G. S. Agarwal, and V. M. Menon, "Optical analog of valley Hall effect of 2D excitons in hyperbolic metamaterial," *Optica* **8**(1), 50-55 (2021)
1. K. Elassy, M Rahman, **N. S. Yama**, W. A. Shiroma, and A. T. Ohta, "Complex permittivity of NaOH solutions used in liquid-metal circuits," *IEEE Access* **7**(1), pp. 150150-150156 (2019)

Refereed Conference Proceedings

6. C.-C. Wu, **N. Yama**, F. Hatami, K.-M. Fu, "A scalable GaP-on-diamond spin-photon interface," in *APS Global Summit (March Meeting) 2026*, session MAR-G10

5. **N. Yama**, C. Pederson, L. Beale, M. Markham, K.-M. Fu, "Rapid, in-situ neutralization of nitrogen- and silicon-vacancy centers in diamond using above-band-gap optical excitation," in *APS Global Summit (March Meeting) 2025*, session MAR-C31
6. A. Han, W. Strey, E. Garcia, B. Matthews, T. Nguyen, E. Hansen, C. Pederson, **N. Yama**, M. Parsons, K.-M. Fu, "Progress toward a quantum processor testbed based on nitrogen-vacancy centers in diamond," in *Division of Atomic, Molecular and Optical Physics Meeting*, abstract F01.046
5. **N. Yama**, S. Chakravarthi, A. Abulnaga, D. Huang, C. Pederson, F. Hatami, N. de Leon, K.-M. Fu, "Hybrid Integration of GaP Photonic Crystal Cavities with Silicon-Vacancy Centers in Diamond by Stamp Transfer," in *APS March Meeting 2023*, abstract T65.009
4. M. Khatoniar, B. Chakraborty, **N. Yama**, and V. Menon, "Long Range Valley Hall Effect in WS2 Bloch Surface Wave Exciton Polaritons," in *Conference on Lasers and Electro-Optics*, OSA Technical Digest (Optical Society of America, 2020), paper SW3G.3. DOI: 10.1364/CLEO_SI-2020-SW3G.3
3. **N. S. Yama**, K. Elassy, W. A. Shiroma, and A. T. Ohta, "Predictive design of a liquid-metal switch actuated by continuous electrowetting," *IEEE Texas Symposium on Wireless & Microwave Circuits and Systems*, 26 May 2020. DOI: 10.1109/WMCS49442.2020.9172401
2. S. Guddala, M. Khatoniar, **N. Yama**, and V. M. Menon, "Optical valley-Hall effect of 2D excitons," in *Conference on Lasers and Electro-Optics*, OSA Technical Digest (Optical Society of America, 2019), paper FM4D.2. DOI: 10.1364/CLEO_QELS.2019.FM4D.2
1. M. Khatoniar, **N. Yama**, A. Ghazaryan, S. Guddala, P. Ghaemi, and V. Menon, "Room Temperature Control of Valley Coherence in Bilayer WS2 Exciton Polaritons," in *Conference on Lasers and Electro-Optics*, OSA Technical Digest (Optical Society of America, 2019), paper JTu2A.52. DOI: 10.1364/CLEO_AT.2019.JTu2A.52

Software

qdl-utils (`https://github.com/UW-Quantum-Defect-Lab/qdl-utils`)
Active developer and maintainer

UW Quantum Defect Lab Utilities (`qdlutils`) is a Python-based software package for interfacing with hardware utilized in experiments at the Quantum Defect Laboratory. Targeted for use with optically active spin-defects, `qdlutils` enables a wide variety of complex, programmable experiments and contains graphically interfaced applications for confocal imaging, photoluminescence excitation spectroscopy, and stage movement.

Employment

University of Washington (Seattle, WA)

Research Assistant at Quantum Defect Laboratory — 2020 – 2025

NSF Graduate Research Fellow — 2020 – 2025

Grader — 2023
EE 528 (Quantum Optics)

Unversity of Hawai'i at Mānoa (Honolulu, HI)

Teaching Assistant — 2018 – 2020
EE 160 (C Programming for Engineers)
EE 213 (Circuit Analysis II)

Tutor at UH Mānoa Learning Assistance Center and Housing Success Center — 2017 – 2018

City College of New York/Columbia University (New York City, NY)

Undergraduate Research Assistant at Laboratory for Nano and Micro Photonics — 2019
MRSEC REU student — 2018

Skills

Programming languages and software
Experienced: Python, MATLAB, C, LaTeX, KLayout, GenISys BEAMER
Familiar: Mathematica, HTML/CSS

Simulation software
Lumerical Electromagnetic Simulations (MODE/FDTD/varFDTD), Lumerical scripting
Tidy3D Electromagnetic Simulation
MEEP, MIT Photonic Bands (MPB)

Experimental
Optics and laser alignment, Microscope building and design, Photoluminescence spectroscopy, Photoluminescence excitation (PLE) spectroscopy

Micro-/nano-fabrication
Electron beam lithography (EBL), Masked Photolithography, Spin coating, Inductively-coupled plasma reactive-ion etch (ICP RIE), Wet etching, Chemical vapor etch, Critical point drying, Electron beam evaporation deposition, Plasma-enhanced chemical vapor deposition (PECVD)

Theory and design
Cavity quantum electrodynamics (c-QED), Integrated photonics, Photonic crystals and cavities, Ray optics, Nonlinear optics, Coupled-mode theory (CMT), Multiple-scales analysis and asymptotics

Miscellaneous

Professional Memberships
IEEE (student member, 2019)
APS (student member, 2023)

Certifications
Certificate of Quantum Excellence (IBM Qiskit Global Summer School 2020)

References

(*Available upon request*)