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Department of Applied Physics, Stanford University
348 Via Pueblo Mall, Stanford, CA 94305

EDUCATION

Stanford University

2018 - 2023

Expected graduation: December 2023

PhD candidate in Applied Physics, GPA 4.18

Stanford Graduate Fellowship 2020-23, Urbanek Family Fellow

Advisor: Prof. Amir Safavi-Naeini

Wrocław University of Science and Technology

2017 - 2018

MSc, Technical (Applied) Physics, Graduated with honours

Best MSc student of Wrocław University of Science and Technology award

Thesis: *Studies of Fermi level position at the van der Waals layer/GaN interface for selected van der Waals crystals*

Advisor: Prof. Robert Kudrawiec

Wrocław University of Science and Technology

2013 - 2017

BSc, Technical (Applied) Physics, Graduated with honours,

Faculty's best undergraduate student award

Thesis: *Fermi level position at the liquid-semiconductor interface*

Advisor: Prof. Robert Kudrawiec

Experience

Graduate Research Assistant

01/2019 - present

[Laboratory for Integrated Nano-Quantum Systems](#), Stanford University

- *Integration of individual components into on-chip nanophotonic networks for quantum optics applications.*
- *Design, fabrication, and testing of individual LiNbO₃ components (optical resonators, OPOs, waveguides for frequency conversion, directional couplers, grating couplers, electro-optic components, frequency combs, etc.)*
- *Experience in optical characterization, full-chip measurement automation using free space and fiber optics. Coupling different wavelengths of light in and out of the chip through end facets and grating couplers.*
- *Collaborating with other research groups for heterogeneous integration of LiNbO₃ with other material platforms.*
- *Leading nonlinear nanophotonics team within the lab, including mentoring junior graduate students.*

Supervisor: Prof. Amir Safavi-Naeini

Photonics Experimentalist Intern

06/2022 - 09/2022

Exploratory Design Group, Apple

Graduate Research Assistant

10/2018 - 12/2018

SLAC National Accelerator Laboratory, Stanford University

- *Numerical modeling of pump-probe experiments for a novel X-ray laser (LCLS-II).*
- *Modeling intensities of Bragg peaks for crystals with ionized core orbitals*

Supervisor: Prof. Philip Bucksbaum

Research Assistant

09/2014 - 09/2018

Laboratory for Optical Spectroscopy of Nanostructures, Wrocław University of Science and Technology

- *Optical spectroscopy of semiconductor heterostructures and two-dimensional materials.*
- *Construction of a novel system for photoluminescence-based, real-time verification of TMDC monolayers*
- *Artificial photosynthesis using GaN*
- *Band structure and electro-optical properties of highly mismatched semiconductors and low dimensional heterostructures*

Supervisor: Prof. Robert Kudrawiec

Student Internship

08/2017 - 06/2018

PORT Polish Center for Technology Development

- *Exfoliation and patterning of transition metal dichalcogenides monolayers.*
- *Van der Waals/GaN structures processing - dry etching, contacts patterning*

Supervisor: Dr. Katarzyna Komorowska

Research Assistant

01/2016 - 04/2017

Quantum Technologies Department, Wrocław University of Science and Technology

- *Application of braid groups in physics and informatics*

Supervisor: Dr. Janusz Jacak

Student Internship

08/2015 – 10/2015

Chemical Reaction Engineering Group, Universität Leipzig

- *Preparation and characterization of nanoporous glass and ceramics for catalytic applications.*
- *Influence of ZrO₂ on ion exchange and phase separation of alkali borosilicate glasses*

Supervisor: Prof. Dirk Enke

PUBLICATIONS

1. **H. S. Stokowski**, T. P. McKenna, T. Park, A. Hwang, D. J. Dean, O. T. Celik, V. Ansari, M. M. Fejer, A. H. Safavi-Naeini, Integrated Quantum Optical Phase Sensor in Thin Film Lithium Niobate, *Nat. Commun.* **14**, 3355 (2023), [10.1038/s41467-023-38246-6](https://doi.org/10.1038/s41467-023-38246-6)
2. J. Mishra, M. Jankowski, A. Y. Hwang, **H. S. Stokowski**, T. P. McKenna, C. Langrock, E. Ng, D. Heydari, H. Mabuchi, A. H. Safavi-Naeini, and M. M. Fejer, Ultra-broadband mid-infrared generation in dispersion-engineered thin-film lithium niobate, *Opt. Express* **30**, 32752-32760 (2022), doi: [10.1364/OE.467580](https://doi.org/10.1364/OE.467580)
3. T. P. McKenna*, **H. S. Stokowski***, V. Ansari, J. Mishra, M. Jankowski, C. J. Sarabalis, J. F. Herrmann, C. Langrock, M. M. Fejer, and A. H. Safavi-Naeini, Ultra-low-power second-order nonlinear optics on a chip, *Nat. Commun.* **13**, 4532 (2022), doi: [10.1038/s41467-022-31134-5](https://doi.org/10.1038/s41467-022-31134-5)
4. O. T. Celik, C. J. Sarabalis, F. M. Mayor, **H. S. Stokowski**, J. F. Herrmann, T. P. McKenna, N. R. A. Lee, W. Jiang, K. K. S. Multani, and A. H. Safavi-Naeini, High-bandwidth CMOS-voltage-level electro-optic modulation of 780 nm light in thin-film lithium niobate, *Opt. Express* **30**, 23177-23186 (2022), doi: [10.1364/OE.460119](https://doi.org/10.1364/OE.460119)
5. T. Park, **H. S. Stokowski**, V. Ansari, T. P. McKenna, A. Y. Hwang, M. M. Fejer, and A. H. Safavi-Naeini, High-efficiency second harmonic generation of blue light on thin-film lithium niobate, *Opt. Lett.* **47**, 2706-2709 (2022), doi: [10.1364/OL.455046](https://doi.org/10.1364/OL.455046)

6. J. Mishra*, T. P. McKenna*, E. Ng*, **H. S. Stokowski***, M. Jankowski, C. Langrock, D. Heydari, H. Mabuchi, M. M. Fejer, and A. H. Safavi-Naeini, Mid-infrared nonlinear optics in thin-film lithium niobate on sapphire, *Optica* **8**, 921-924 (2021), doi: [10.1364/OPTICA.427428](https://doi.org/10.1364/OPTICA.427428)
7. **H. S. Stokowski**, J. E. Jacak, L. Jacak, Effective information processing with pure braid group formalism in view of 2D holographic principle for information, [arXiv:2011.11040](https://arxiv.org/abs/2011.11040) (2020)
8. A. P. Herman, Ł. Janicki, **H. S. Stokowski**, M. Rudzinski, E. Rozbiegala, M. Sobanska, Z. R. Zytewicz, and R. Kudrawiec, Determination of Fermi Level Position at the Graphene/GaN Interface Using Electromodulation Spectroscopy, *Adv. Mater. Interfaces* **7**, 2001220 (2020), doi: [10.1002/admi.202001220](https://doi.org/10.1002/admi.202001220)
9. **H. S. Stokowski**, Ł. Janicki, J. Serafińczuk, M. Siekacz, C. Skierbiszewski, and R. Kudrawiec, Depletion layer built-in field at (1 $\bar{1}$ 00) and (0001) GaN/water junction and its role in semiconductor nanowire water splitting, *Adv. Mater. Interfaces* **6**, 1801497 (2019), doi: [10.1002/admi.201801497](https://doi.org/10.1002/admi.201801497)
10. Ł. Gelczuk, **H. S. Stokowski**, J. Kopaczek, L. Zhang, Y. Li, K. Wang, P. Wang, S. Wang, and R. Kudrawiec, Bi-induced acceptor level responsible for partial compensation of native free electron density in InP_{1-x}Bi_x dilute bismide alloys, *J. Phys. D: Appl. Phys.* **49**, 115107 (2016), doi: [10.1088/0022-3727/49/11/115107](https://doi.org/10.1088/0022-3727/49/11/115107)
11. Ł. Gelczuk, **H. S. Stokowski**, M. Dąbrowska-Szata, and R. Kudrawiec Origin and annealing of deep-level defects in GaNAs grown by metalorganic vapor phase epitaxy, *J. Appl. Phys.* **119**, 185706 (2016), doi: [10.1063/1.4949514](https://doi.org/10.1063/1.4949514)

CONFERENCE PUBLICATIONS

1. **H. S. Stokowski**, D. J. Dean, A. Y. Hwang, T. Park, O. T. Celik, M. Jankowski, V. Ansari, M. M. Fejer, and A. H. Safavi-Naeini, Optical Frequency Comb via Electro-Optically Locked Parametric Oscillator in Thin Film Lithium Niobate, *Optica Nonlinear Optics Topical Meeting*, Honolulu, Hawaii, USA, July 10-13, 2023
2. M. Hamrouni, M. Jankowski, A. Hwang, N. Jornod, J. Mishra, **H. S. Stokowski**, T. P. McKenna, C. Langrock, T. Södmeyer, A. H. Safavi-Naeini, and M. M. Fejer, Efficient Parametric Downconversion by Gain-Trapped OPA in Thin-Film Lithium Niobate, *Optica Nonlinear Optics Topical Meeting*, Honolulu, Hawaii, USA, July 10-13, 2023
3. D. J. Dean, T. Park, **H. S. Stokowski**, A. Y. Hwang, L. Qi, M. M. Fejer, and A. H. Safavi-Naeini, Efficient Second Harmonic Resonant Nonlinear Device in Thin-Film Lithium Niobate, *Optica Nonlinear Optics Topical Meeting*, Honolulu, Hawaii, USA, July 10-13, 2023
4. A. Y. Hwang, **H. S. Stokowski**, T. Park, M. Jankowski, T. P. McKenna, J. Mishra, M. M. Fejer, and A. H. Safavi-Naeini, Integrated Lithium Niobate OPO for Tunable Mid-IR Spectroscopy, *Optica Nonlinear Optics Topical Meeting*, Honolulu, Hawaii, USA, July 10-13, 2023

5. A. H. Safavi-Naeini, **H. S. Stokowski**, T. P. McKenna, T. Park, A. Y. Hwang, D. J. Dean, O. T. Celik, V. Ansari, J. Mishra, M. Jankowski, M. M. Fejer, Integrated Lithium Niobate Quantum Nonlinear Optical Devices,
Optica Nonlinear Optics Topical Meeting, Honolulu, Hawaii, USA, July 10-13, 2023
6. **H. S. Stokowski**, T. P. McKenna, T. Park, A. Y. Hwang, D. J. Dean, O. T. Celik, V. Ansari, M. M. Fejer, and A. H. Safavi-Naeini, Quantum-Enhanced Phase Detection in a Lithium Niobate Photonic Integrated Circuit,
Conference on Lasers and Electro-Optics (CLEO), San Jose, California, USA, May 5-10, 2023
7. T. Park, **H. S. Stokowski**, T. P. McKenna, A. Y. Hwang, D. J. Dean, L. Qi, O. T. Celik, V. Ansari, M. M. Fejer, and A. H. Safavi-Naeini, Squeezed Light Generation and Analysis Using a sub-Threshold Optical Parametric Oscillator on Integrated Thin-Film Lithium Niobate Photonic Circuit,
Conference on Lasers and Electro-Optics (CLEO), San Jose, California, USA, May 5-10, 2023
8. M. Hamrouni, M. Jankowski, A. Hwang, N. Jornod, J. Mishra, **H. S. Stokowski**, T. P. McKenna, C. Langrock, T. Südmeyer, A. H. Safavi-Naeini, and M. M. Fejer, Efficient Broadband Mid-Infrared Optical Parametric Amplification in Nanophotonic Waveguides,
Conference on Lasers and Electro-Optics (CLEO), San Jose, California, USA, May 5-10, 2023
9. H. Lee, D. Riedel, J. Grzesik, J. F. Herrmann, S. Aghaeimeibodi, J.-M. Borit, V. Ansari, **H. S. Stokowski**, L. Qi, T. Park, A. Y. Hwang, T. P. McKenna, P. McQuade, H. Lu, Z.-X. Shen, A. H. Safavi-Naeini, and J. Vučković, Heterogeneous Integration of SiV- Centers in Diamond With Lithium Niobate Photonics for Quantum Networks,
Conference on Lasers and Electro-Optics (CLEO), San Jose, California, USA, May 5-10, 2023
10. L. Qi, **H. S. Stokowski**, T. P. McKenna, J. Herrmann, T. Park, A. Y. Hwang, V. Ansari, M. M. Fejer, J. Vučković, and A. H. Safavi-Naeini, Cryogenic Visible-to-Infrared Quantum Interface in a Lithium Niobate Photonic Circuit,
Conference on Lasers and Electro-Optics (CLEO), San Jose, California, USA, May 5-10, 2023 [poster]
11. A. Y. Hwang, **H. S. Stokowski**, T. Park, M. Jankowski, T. P. McKenna, J. Mishra, M. M. Fejer, and A. H. Safavi-Naeini, Singly-Resonant Mid-IR Optical Parametric Oscillator in Lithium Niobate Nanophotonics,
Conference on Lasers and Electro-Optics (CLEO), San Jose, California, USA, May 5-10, 2023
12. H. Lee, D. Riedel, J. Herrmann, Y. Grzesik, J.-M. Borit, V. Ansari, **H. S. Stokowski**, L. Qi, T. Park, A. H. Hwang, T. McKenna, H. Lu, P. McQuade, Z.-X. Shen, N. Melosh, A. Safavi-Naeini, J. Vučković, Heterogeneous Integration of Diamond and Lithium Niobate Nanophotonics for Quantum Networks,
APS March Meeting 2023, Las Vegas, Nevada, USA, March 5–10 2023.
13. M. Hamrouni, A. Hwang, M. Jankowski, J. Mishra, **H. S. Stokowski**, T. P. McKenna, N. Jornod, C. Langrock, T. Südmeyer, A. H. Safavi-Naeini, M. M. Fejer, Efficient and Broadband Generation of Mid-Infrared Pulses by Optical Parametric Amplification in Dispersion-Engineered Thin Film Lithium Niobate,
10th EPS-QEOD Europhoton Conference on Solid-State, Fibre, and Waveguide Coherent Light Sources (EUROPHOTON 2022), Hannover, Germany, August 28 - September 9, 2022,
doi: [10.1051/epjconf/202226702017](https://doi.org/10.1051/epjconf/202226702017)
14. T. Park, **H. S. Stokowski**, V. Ansari, T. P. McKenna, A. Y. Hwang, M. M. Fejer, A. H. Safavi-Naeini, Second harmonic generation of blue light on integrated thin-film lithium niobate waveguides,
Conference on Lasers and Electro-Optics (CLEO), San Jose, California, USA, May 15-20, 2022,
doi: [10.1364/CLEO_SI.2022.SM4O.3](https://doi.org/10.1364/CLEO_SI.2022.SM4O.3)

15. T. P. McKenna*, **H. S. Stokowski***, V. Ansari, J. Mishra, M. Jankowski, C. J. Sarabalis, J. F. Herrmann, C. Langrock, M. M. Fejer, and A. H. Safavi-Naeini, Fully-Resonant Second Harmonic Generation in Periodically Poled Thin-Film Lithium Niobate, *Conference on Lasers and Electro-Optics (CLEO)*, San Jose, California, USA, May 9-14, 2021, doi: [10.1364/CLEO_SI.2021.SM4L.7](https://doi.org/10.1364/CLEO_SI.2021.SM4L.7)
16. **H. S. Stokowski***, T. P. McKenna*, V. Ansari, J. Mishra, M. Jankowski, C. J. Sarabalis, J. F. Herrmann, C. Langrock, M. M. Fejer, and A. H. Safavi-Naeini, Optical Parametric Oscillator in Thin-Film Lithium Niobate with a 130 μ W Threshold, *Conference on Lasers and Electro-Optics (CLEO)*, San Jose, California, USA, May 9-14, 2021, doi: [10.1364/CLEO_SI.2021.SM4L.6](https://doi.org/10.1364/CLEO_SI.2021.SM4L.6)
17. D. Das, K. Multani, **H. S. Stokowski**, A. H. Safavi-Naeini, P. Welander, E. Nanni, Fabricating low loss, lumped element niobium resonators, *APS March Meeting 2021*, Virtual, March 15–19, 2021
18. J. Mishra, T. P. McKenna*, E. Ng*, **H. S. Stokowski***, M. Jankowski, C. Langrock, D. Heydari, H. Mabuchi, A. H. Safavi-Naeini, and M. M. Fejer, Mid-infrared nonlinear optics in thin-film lithium niobate on sapphire, *Conference on Lasers and Electro-Optics (CLEO)*, San Jose, California, USA, May 9-14, 2021, doi: [10.1364/CLEO_SI.2021.SM3J.1](https://doi.org/10.1364/CLEO_SI.2021.SM3J.1)
19. K. Multani, **H. S. Stokowski**, E. Snively, R. Patel, W. Jiang, N. Lee, P. Welander, E. Nanni, A. H. Safavi-Naeini, Development Of a Millimeter-Wave Transducer For Quantum Networks, *IRMMW-THz 2020* Buffalo, New York, USA, November 7-13, 2020, doi: [10.1109/IRMMW-THz46771.2020.9370661](https://doi.org/10.1109/IRMMW-THz46771.2020.9370661)
20. B. Kuchhal, E. Snively, K. Multani, **H. S. Stokowski**, D. Das, A. H. Safavi-Naeini, P. Welander, E. Nanni, Low-Loss THz Sommerfeld Mode On A Superconducting Niobium Wire For Millimeter-Wave Interconnects, *IRMMW-THz 2020* Buffalo, New York, USA, November 7-13, 2020 [poster], doi: [10.1109/IRMMW-THz46771.2020.9370615](https://doi.org/10.1109/IRMMW-THz46771.2020.9370615)
21. K. Multani, **H. S. Stokowski**, J. Witmer, W. Jiang, R. Patel, N. Lee, M. Pechal, E. Snively, P. Welander, E. Nanni, and A. H. Safavi-Naeini, Towards the development of a microwave to millimeter-wave quantum frequency converter, *APS March Meeting 2020* Denver, Colorado, USA, March 2–6 2020.
22. B. Kuchhal, E. Snively, K. Multani, **H. S. Stokowski**, A. H. Safavi-Naeini, P. Welander, and E. Nanni, THz Sommerfeld Wave Propagation on Superconducting Niobium Wire for Millimeter-Wave Interconnects, *APS March Meeting 2020* Denver, Colorado, USA, March 2–6 2020.
23. **H. S. Stokowski**, M. Pechal, E. Snively, K. Multani, P. Welander, J. Witmer, E. Nanni, A. H. Safavi-Naeini, Towards Millimeter-Wave Based Quantum Networks, *IRMMW-THz 2019* Paris, France, 1-6 September 2019, doi: [10.1109/IRMMW-THz.2019.8874171](https://doi.org/10.1109/IRMMW-THz.2019.8874171)
24. **H. S. Stokowski**, K. Komorowska, M. Rudziński, and R. Kudrawiec, Studies of the van der Waals crystals/GaN contact character for optoelectronic devices, *3rd Intercollegiate Conference - Advanced Materials and Nanotechnology* Wrocław, Poland, 19-20 May 2018.

PATENT APPLICATIONS

1. A. H. Safavi-Naeini, T. P. McKenna, and **H. S. Stokowski**, Quantum Enhanced Optical Modulator or Sensor, US Patent App. 17/740,027, 2022

2. M. M. Fejer, A. H. Safavi-Naeini, T. P. McKenna, M. Jankowski, **H. S. Stokowski**, A. Y. Hwang, and J. Mishra, Ultra-Broadband Mid-Infrared Generation in Dispersion-Engineered Thin-Film Lithium Niobate, US Provisional Patent App., 2022
3. A. H. Safavi-Naeini, **H. S. Stokowski**, A. Y. Hwang, Quantum Enhanced Optical Modulator or Sensor, US Provisional Patent App., 2023

AWARDS & HONORS

Stanford Graduate Fellowship 2020-23	05/2020 - 09/2023
<i>Stanford University, Urbanek Family Fellow</i>	
Best graduate student award	11/2018
<i>Wroclaw University of Science and Technology</i>	
Dean's Awards	06/2018, 06/2016
<i>Faculty of Fundamental Problems of Technology, Wroclaw University of Science and Technology</i>	
Santander Universidades Scholarship	03/2018
<i>Santander Group (BZ WBK)</i>	
Science and Higher Education Minister's Scholarships	12/2017, 12/2016
<i>Polish Ministry of Science and Higher Education</i>	
Best undergraduate student award	11/2017
<i>Faculty of Fundamental Problems of Technology, Wroclaw University of Science and Technology</i>	
Rector's Award	05/2017
<i>Wroclaw University of Science and Technology</i>	
Stefan Bryła's Scholarship	11/2016
<i>Santander Group (BZ WBK foundation)</i>	
University Special Scholarship	05/2016
<i>Wroclaw University of Science and Technology</i>	
Erasmus+ scholarship	08/2015 – 09/2015
Honorable Mention from the Dean	06/2015
<i>Faculty of Fundamental Problems of Technology, Wroclaw University of Science and Technology</i>	
Rector's Scholarships for the best students	10/2014 – 06/2018
<i>Wroclaw University of Science and Technology</i>	

OTHER INTERESTS & SKILLS

Languages: Polish (native), English (fluent), Spanish (elementary)

Software: COMSOL, Lumerical, MATLAB, Adobe Illustrator, SolidWorks, AutoCAD, Python, C++

Nanofabrication: mask design (CAD), electron-beam lithography, photolithography, dry and wet etching, periodically poled lithium niobate, thin film deposition, characterization, SEM

Experimental skills: optical spectroscopy, experiment automation, RF measurements, cryogenic measurements

REFERENCES

- Prof. Amir Safavi-Naeini (PhD Research Advisor)**
*Laboratory of Integrated Nano-Quantum Systems,
 Ginzton Laboratory, Stanford University*
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- Prof. Robert Kudrawiec (BSc and MSc Research Advisor)**
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- Prof. Dirk Enke (Internship Research Advisor)**
*Chemical Reaction Engineering Group,
 Institute of Chemical Technology, Faculty of Chemistry and Mineralogy, Universität Leipzig*
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4. **Prof. Grzegorz Sęk (BSc and MSc thesis committee chair and lecturer)**

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5. **Prof. Arkadiusz Wójs (Lecturer and Dean of Faculty)**

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