Andrew Sarangan

Dept. of Electro-Optics and Photonics
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http://professornano.com/

OVERVIEW

Professor & Chair, Dept. of Electro-Optics and Photonics
- Focus areas: Thin Films, Nanofabrication, Optoelectronics

Licensed Professional Engineer (Ohio)
Commercial Pilot & Flight Instructor
Amateur Radio: KE8ORW (General)
Citizenship: USA & Canada
Security Clearance: Current (details available upon request)

ACADEMIC APPOINTMENTS

University of Dayton, OH, USA
Department of Electro-Optics and Photonics

Executive Director for Semiconductor Engineering and Science	2026 - present
Dean's Cabinet Member	2023 - present
Department Chair	2020 - present
Full Professor	2011 - present
Associate Professor	2006 - 2011
Assistant Professor	2000 - 2006

- **Key Accomplishments (as chair)**:
  - Led the creation of the Semiconductor Manufacturing Co-Major and the EOP Minor degrees, including several new courses in semiconductors.
  - Led the largest restructuring of the department's academic program in two decades.
  - Re-negotiated several partnerships with industries and universities to better align with the mission of my department and the university.
  - Led a corporate partnership with IBM on semiconductor fab (one of the largest such partnerships at UD)
- **Key Accomplishments (as faculty)**:
  - Produced over $11M in research funding in thin films, nanofabrication and optoelectronics.
  - Established a nanofabrication cleanroom as a single-PI effort *entirely from externally sponsored research funds*. To the best of my knowledge, there is no other facility of this magnitude that was created and run by a single PI.

  - My lab is currently the focal point for UD's participation in the federal Chips Act and Intel's educational partnership.
  - I personally maintain its daily operations, and until recently received no subsidies or course-release from the university. The laboratory has all of the standard fab capabilities (thin films, photolithography, deep-UV interference lithography, thermal processes and plasma etching). Laboratory website: http://nano-fab.com

- **Research Areas**: Nanofabrication, Optical thin films, Phase change materials, Lithography

University of New Mexico, Albuquerque, NM, USA
Center for High Technology Materials (CHTM) 1997 - 2000
Research Assistant Professor

- High power, high brightness semiconductor lasers

EDUCATION

PhD Electrical Engineering 1993-1997
University of Waterloo, Canada
"Multi-wavelength distributed feedback lasers"
Dissertation advisor: W. -P. Huang (currently at Shandong University, China)

MASc Electrical Engineering 1991-1993
University of Waterloo, Canada
"An electronic switch based on quantum interference"
Thesis advisor: W. -P. Huang

BASc Electrical Engineering 1986-1991
University of Waterloo, Canada
Physics Option

AWARDS & HONORS

- 2019 IEEE Dayton Section Photonics Society Award:
  For recognition of his work in supporting photonics in the greater Dayton area, including his many years of service as the head of the IEEE Dayton Photonics Society, as well as his work in teaching and research in the fields of thin films and nanofabrication
- AFOSR Summer Faculty Fellowship (2001 - 2002, 2017 - 2020) for research at Air Force Research Laboratory, Wright-Patterson AFB.
- 2018 Vision Award for Excellence - University of Dayton
- 2013 Faculty Excellence in Teaching Awards – Southwestern Ohio Council for Higher Education
- 2013 Affiliate Societies Council Outstanding Scientists & Engineers Award – Research category, Dayton, OH
- 2008 Sigma Xi Noland Award for Excellence in Research, University of Dayton

- Post-Doctoral Fellowship for Research in Optoelectronics (1997 &1998) - Natural Sciences and Engineering Research Council (NSERC) of Canada. This is a prestigious two-year award. Only 14 were awarded in all of Canada in Electrical Engineering during this cycle, and I was the only Engineering recipient at the University of Waterloo.
- Post-Graduate Scholarship, NSERC of Canada (1991-1995). Full scholarships for MS & PhD.
- Telecommunications Research Institute of Ontario (Canada) Internship award (1995-1997).

PROFESSIONAL SOCIETIES & SERVICE

- Conference Program Committee - SPIE Nanoscience + Engineering (2022 - present)
- Associate Editor of IEEE Journal of Quantum Electronics (2016 - 2021)
- Chair of the Technical program committee of IEEE Photonics Society on Photodetectors, Sensors, Systems and Imaging (2017, 2018 & 2019)
- Chair of the IEEE/Photonics Society chapter of Dayton, OH (2002 - 2018)
- Conference Chair - SPIE Great Lakes Photonics Symposium, Nano and Micro Technologies and Applications (2004)
- Conference Chair - SPIE Great Lakes Photonics Symposium, Nano and Microphotonics: Materials, Devices, Processing, and Applications (2006)
- Conference Program Committee - Great Lakes Photonics Symposium, Liquid Crystal Technology and Applications (2006)
- Conference Program Committee - SPIE International Symposium on Photonics and Optoelectronics, SOPO, (2014)
- Conference Program Committee - SPIE International Workshop on Thin Films for Electronics, Electro-Optics, Energy and Sensors (2019)
- IEEE, Photonics Society, Electron Devices Society, Member (1994 - present), Senior Member (2005 - present)
- SPIE, Member (2004 - present), Senior Member (2015 - present), Lifetime Member (2016 - present)
- Member, AIAA, American Institute of Aeronautics and Astronautics (2023 -present)
- Member, AOPA, Aircraft Owners and Pilots Association (1997 - present)
- Member, EAA, Experimental Aircraft Association (1999 - present)

ENGINEERING PRACTICE

- Consultant for Silfex (Lam Research Corp.) on semiconductor etch process development
- Consultant for several DoD contractors in semiconductors and photonics
- Employed at Nortel Networks, IBM & Air Force Research Laboratory (Kirtland AFB).

PROFESSIONAL AVIATION EXPERIENCE

- FAA Certificates:
  - Commercial Pilot (since 1999): Airplane Single Engine Land/Instrument Airplane
  - Flight Instructor (since 2000): Airplane Single Engine/Instrument
  - Ground Instructor (since 2004): Advanced/Instrument
  - Remote Pilot (since 2018)
- Flight Experience:
  - $\sim$ 1600 hours as pilot-in-command
  - 25 years of flight experience in USA & Canada
- Sinclair Community College, Dayton, OH
  - Over 350 hrs of IFR instruction given in the Redbird FMX motion flight simulator
  - Taught classes for primary and instrument ratings
- Flight Instructor (freelance), Dayton, OH (MGY & I73) 2000 - present
  - Professional pilot training for primary and instrument students
- Flight Instructor (freelance), Albuquerque, NM (ABQ) 1998 - 2000
  - Taught high density altitude and mountain operations in Colorado and New Mexico
  - Professional pilot training for primary and instrument students

PATENTS

- Agus Widjaja, Andrew Sarangan, "*Thin film structures with negative inductance and methods for fabricating inductors comprising the same*", U.S. Patent No. 20090261936, 2011
- Gregory M. Peake, Stephen D. Hersee and Andrew M. Sarangan, "*Non-Planar Micro-Optical Structures*", U.S. Patent No. 6,728,289, 2004
- Gregory M. Peake, Stephen D. Hersee and Andrew M. Sarangan, "*Method of Making Non-Planar Micro-Optical Structures*", U.S. Patent No. 6365237, 2002
- G.P. Li, T. Makino, A. Sarangan and W.P. Huang, "*Multi-Wavelength Gain-Coupled Distributed Feedback Laser Arrays with Fine Tunability*", U.S. Patent No. 5536085, 1996

EXTERNAL FUNDING [$6.6M as PI, $4.9M as Co-PI, Total $11.5M]

- **(Active)** Air Force SBIR/Exciting Technology LLC, "Laser Attritable Surveillance Enhancement (LASE)", $240,044 (PI, 9/2025 - 08/2027).
- **(Active)** National Institute of Standards and Technology (NIST), "Southwest Ohio Integrated Microsystems Workforce & Research Center", $1,999,996 (Co-PI, 10/2024 - 09/2026).
- **(Active)** National Science Foundation (NSF), "Collaborative Research: COLLABORATIVE RET Site: Teacher POWER (Preparing Our Workforce through Electronics and Research)", $205,020 (PI, 09/2024 - 08/2027).

- **(Active)** National Science Foundation (NSF), "Equipment: Acquisition of a laser direct-write photolithography system", $390,390 (PI, 09/2023 - 08/2026).
- **(Active)** Lam Research Corp., "Metal-Assisted Chemical Etching (MACE) for surface roughening of silicon", $25,000 (Unlocking Ideas Competition Award) (PI, 10/2021).
- **(Active)** Ford Motor Co., "E-Tunable NIR Filter", $50,000 (Ford University Research Program) (PI, 10/2022).
- Air Force Research Laboratory/DAGSI, "Nonlinear Optical Materials", $151,614 (PI, 08/2021-10/2024).
- Ohio Federal Research Network/OSU, "ALTITUDE: Affordable LIDAR Technologies for Integration and Unmanned Deployment", $267,035 (PI, 10/2021-04/2023).
- Ohio Federal Research Network/OSU, "Thin-film Crystals for High-speed Optical Modulation", $401,669 (co-PI, 10/2021-04/2023).
- Air Force Research Laboratory/UES, "Vanadium Oxide Growth & Characterization", $51,576 (PI, 08/2021-03/2023).
- Air Force Research Laboratory/Azimuth, "Novel Optical Thin Films", $259,846 (PI, 06/2021-07/2022).
- Brisk Computing LLC., "Neuromorphic Chip Fabrication", $10,023 (PI, 09/2020-02/2021).
- Silfex Inc., "Fundamental studies of etch vs morphology research", $25,000 (PI, 06/2020).
- Air Force Research Lab., "Tunable high energy laser system", $140,000 (Equipment Donation) (PI, 02/2021).
- Gentex Corp., "Stylus Profilometer", $15,000 (Equipment Donation) (PI, 10/2019).
- Lam Research Corp./Silfex Inc, "Laser-assisted chemical etching for deep silicon micromachining", $25,000 (Unlocking Ideas Competition Award) (PI, 08/2018).
- STTR Phase 2 - Air Force, "Fast Optical Limiters with Enhanced Dynamic Range", $376,910, Aegis Inc. (PI, 11/2018-02/2022).
- Gentex Corp., "Wiregrid polarizers for automotive applications", $39,220 (PI, 06/2017 - 12/2018).
- National Science Foundation (NSF), "Collaborative Research: Nanopatterning and temporal control of phase-change materials for reconfigurable photonics", $197,768 (Co-PI, 08/2017 - 07/2020).
- Silanna Semiconductor, "UVC Material evaluation", $9000 (PI, 03/2017 - 08/2017).
- Dayton Area Graduate Studies Institute, "An Integrated Photonics CMOS Compatible Platform for Chemical and Biological Sensors", $228,393 (PI, 07/2016 - 12/2019).
- Air Force Research Laboratory, "Transition Metal Nitrides for Opto-Electronic Applications & New Ferroelectrics & Composite Multiferroic Materials for RF", $98,734 (PI, 07/2017 - 08/2019).

- Air Force Research Laboratory, "Silicon Nanowires", $35,000 (PI, 04/2014 - 12/2014).
- Air Force Research Laboratory/UES, "Infrared Anti-Reflection Coatings", $51,962 (PI, 01/2015 - 06/2017).
- Missile Defense Agency Phase 1 SBIR/Rnet, "ID Compromised Electronic Components", $40,000 (PI, 01/2015 - 07/2015).
- Air Force Research Laboratory, "Thermal Diffusion Tube Furnace System", $13,352 (PI, 10/2014 - 10/2014).
- Air Force Research Laboratory, "Ion Assisted Deposition System", $19,514 (PI, 07/2014 - 07/2014).
- Air Force Research Laboratory, "Interferometric Lithography and Substrate Patterning/Epitaxy for Nonlinear Quasi-Phase-Matched Device Development", $368,505 (PI, 01/2014 - 07/2016).
- Air Force Research Laboratory/UES, "Anti-reflection coatings", $25,000 (PI, 01/2014 - 12/2015).
- National Science Foundation (NSF), "CC-NIE Network Infrastructure: Network 10Gb Upgrade and Science DMZ Implementation to Support Science and Engineering Research and Enhance Outreach for High School STEM Education", $232,788 (Co-PI, 12/2013 - 05/2016).
- National Science Foundation (NSF), "CCSS: Spectral Filter Array for Multispectral Imaging", $319,952 (Co-PI, 09/2013 - 08/2016).
- National Science Foundation (NSF), "Collaborative Research: Cross-institutional Nanotechnology Education and Workforce Training Project", $100,000 (PI, 01/2012 - 12/2014).
- China Southern Glass Holding Co. Ltd, "Electrochromic glass research and development", $175,000 (Co-PI, 10/2012 - 09/2013).
- FMI Imaging, "Development of metal vapor coating & blue-enhanced detectors for medical imaging", $30,800 (PI, 09/2012 - 04/2013).
- FMI Imaging, "Rapid thermal annealer for blue enhanced detector development", $44,300 (PI, 06/2011 - 01/2012).
- Air Force Research Laboratory/UES, "Infrared Coatings for Laser Effects on Materials, Structures and Sensors", $39,000 (PI, 04/2011 - 10/2013).
- Navy SBIR Phase 1/Forza Silicon, "Dual Well Focal Plane Array", $19,536 (PI, 08/2010 - 12/2010).
- Air Force Research Laboratory, "Interdisciplinary Technology Development for Future MAV Systems", $1,506,500 (Co-PI, 10/2008 - 09/2011).
- Air Force Research Laboratory, "Project Biosense", $175,000 (PI, 08/2010 - 07/2013).
- Air Force Research Laboratory, "Mid-Wave Infrared Sensing Technology Advancement (MISTA)", $99,989 (PI, 08/2010 - 12/2012).

- DARPA/University of Rochester, "Development of Mini-Cluster Computational Facility For Modeling Large Mode Area Fibers", $45,200 (PI, 04/2009 - 08/2010).
- Missile Defense Agency SBIR Phase 2/Aegis, "Beam Steering", $33,121 (PI, 04/2009 - 03/2011).
- L3 Cincinnati Electronics, "Development of Spectral and Polarimetric Devices for Lenslet Imaging", $34,158 (PI, 07/2009 - 06/2010).
- Air Force Research Laboratory/GDIT, "Anti-reflection coatings", $44,600 (PI, 04/2008 - 10/2010).
- Air Force Research Laboratory, "Development of Advanced Infrared Detectors", $78,016 (PI, 01/2009 - 10/2009).
- Institute for the Development and Commercialization of Advanced Sensors Technology, "Polarimetric Imaging Technology", $200,000 (PI, 02/2007 - 01/2010).
- Institute for the Development and Commercialization of Advanced Sensors Technology - OSCAR Project, "Fabrication of MWIR Micro-lenslet imaging arrays", $24,530 (PI, 07/2009 - 06/2010).
- Air Force Research Laboratory/L3CE, "Multispectral/Polarimetric Imaging Camera Program", $202,000 (PI, 04/2006 - 12/2007).
- Office of Naval Research/L3CE, "Multi Color IR FPA Utilizing Low Cost 2D Pixel Architecture", $37,000 (PI, 04/2006 - 12/2006).
- Mantech/L3CE, "Large Area Micro-Optics", $25,000 (PI, 10/2005 - 04/2006).
- Air Force Research Laboratory, "Quantum Cascade Lasers", $18,000 (PI, 05/2005 - 12/2005).
- Missile Defense Agency/L3CE, "C-QWIP Based IR Detectors", $45,598 (PI, 05/2005 - 04/2006).
- Ohio Third Frontier Wright Project, "Development and Commercialization of Long-wavelength Infrared Focal Plane Arrays", $1,092,800 (PI, 01/2005 - 03/2009).
- L3 Cincinnati Electronics, "Micro-optic IR FPA Project", $126,727 (PI, 09/2004 - 12/2008).
- Wright Capital Project Fund, "Development of Arrayed micro-optic elements for enhanced infrared image detection", $773,589 (PI, 09/2003 - 08/2006).
- Navy Research Laboratory STTR Phase 1/Defense Research Associates, "Silicon-Based Visible/Near-Infrared Affordable Missile Warning", $17,644 (PI, 07/2003 - 01/2004).
- National Science Foundation (NSF) SBIR Phase 1/Srico Inc, "Photonic Band Gap Waveguide Structures in Lithium Niobate", $19,714 (Co-PI, 07/2002 - 12/2002).
- Dayton Area Graduate Studies Institute, "Measurement and Modeling of Aero-Optical Aberrations in Coherent Laser Radiation", $66,660 (Co-PI, 07/2001 - 06/2004).

GRADUATE STUDENTS

Current

- Maryam Al-Saud (PhD), Osama Rana (PhD), Angelica Drees (PhD), Gayan Rajapaksha (PhD)

Past

- Remona Heenkenda (PhD, 2024), Angelica Dress (MS, 2024), Roseanna Lawandi (PhD, 2023), Gongxu Bai (MS, 2021), Maggie Lankford (MS, 2021), Haixin Zhang (MS, 2021), Jacob Hoehler (MS, 2020), David Lombardo (PhD, 2020), Zachary Biegler (MS, 2019), Roseanna Lawandi (MS, 2018), Josh Duran (PhD, 2018), Pengfei Guo (PhD, 2018), Chuan Ni (PhD, 2017) Shen Yangfei (MS, 2016), Mengyang Zou (MS, 2015), Ying Xu (MS, 2015), Junxin Wang (MS, 2014), Chuan Ni (MS, 2014), Emily Fehrman (PhD, 2014), Piyush Shah (PhD – WSU, 2012), Alex Watson (MS, 2011), Josh Duran (MS, 2011), Ben Booso (MS, 2010), Lirong Sun (PhD, 2009), Adam Cooney (PhD, 2009), Anupriya Krishnan (MS, 2008), Mengshu Pan (MS, 2008), Emily Fehrman (MS, 2007), Aziz Mahfoud (PhD, 2006), Jang-Pyo Kim (PhD, 2006), Cijy Sunny (MS, 2005), Sreelakshmi Talluri (MS, 2005), Saikiran Tiramareddy (MS, 2004), Sarah Blickenstaff (MS, 2004), Luke Borntrager (MS, 2004).

TEACHING

Currently teaching:

Graduate Courses

- Photonic Devices and Systems EOP-506/ECE-573
- Fundamental Principles of Nanofabrication EOP-533/ECE-580 (course was created by me)
- Optical Thin Film Design EOP-532 (course was created by me)

Previously taught:

Graduate Courses

- Integrated Optics EOP-604/ECE-674
- Quantum Electronics EOP-626/ECE-676

Undergraduate Courses

- Electrical and Electronic Circuits EGR-203

Sample Student Evaluation Comments

- *Professor Andrew is an excellent teacher who can explain complicated concepts in a way that's easy to understand. Having more instructors like him would certainly benefit the department!* - Spring 2024
- *I would suggest if all the lectures would be recorded and kept so that students can revisit all the awesome lectures and revision again.* - Spring 2024

- *The lectures were thoroughly enjoyable. Material was always conveyed to be interesting, examples helped to work out minor understandings in how equations would be used, and frequent questions and discussions were great for rounding out material.* - Spring 2023
- *Thanks for the class really enjoyed the information that was provided and I think this class was very informative and the information was delivered in a very concise and robust manner. I learned a lot and the only complaint I have (a small one) is that I wish some parts of the notes provided more derivations from first principals. I know that is not really the purpose of the course but I am pretty nerdy and like that stuff.* - Spring 2022
- *Good class, Good content. Thanks for everything you prepared.* - Spring 2022
- *I really like the notes of this course. It contains lots of pictures, graphs and models, makes the content clear and vivid. Explanation and description are easy to understand. Math and algebra are rather simple, without complex derivation. Actually this is the only textbook I can read just for fun after class, while others really takes courage.* – Spring 2021
- *A lot of advanced technology and sensors are mentioned, which can really arouse one's interest. And I'm able to know much of the details, like the applications, designs and costings.* – Spring 2021
- *Dr. Sarangan educated us to always have the exploring spirit.* – Spring 2021
- *I am impressed by his ability to communicate difficult subjects as if they are intuitive.* – Spring 2020
- *Prof. Andrew provided us with many examples on each topic, which clearly illustrated both theory and application.* – Spring 2020
- *Having access to the notes allowed me to focus on what Dr. Sarangan was saying, not what he was writing. Additionally, the notes were great for studying outside of class.* – Spring 2019
- *Dr. Sarangan did an excellent job preparing notes for the lectures and presenting them in a clear and efficient manner.* – Spring 2019
- *I really liked the way this course was presented. The information seemed to flow logically, the instructor was excited about the topic, and we had projects that required us to think through all the information we learned throughout the semester and apply it to a problem.* – Fall 2018
- *I really enjoyed this course. The material was explained well and the professor's excitement for the field really showed through his teaching. Additionally, the lack of homework and exams, I felt, really took the pressure of academia out of the class and allowed us to simply try to soak in the material. The fact that we did projects throughout the semester allowed us to take the information we had learned in class and apply it to a problem and try to solve it to the best of our ability. Plus, the public speaking gave us practice presenting our work and helped us prepare for questions on our work in the future. All in all, this was one of my favorite (if not my favorite) courses I have taken at UD.* – Fall 2018
- *Dr. Sarangan did a wonderful job organizing the subject matter and repeating the important concepts to really help drive them home.* – Fall 2018
- *Not only did Dr. Sarangan introduce us to the basics of nanofabrication, but he also included many practical engineering insights that enhanced my understanding.* – Fall 2018

SERVICE

I have served on a large number of university committees, including three consecutive School of Engineering Dean search committees, Associate Provost's search committee, School of Engineering Graduate Studies Committee, Graduate Student Summer Fellowship Committee, Research Council Seed Grant Committee, Academic Senate, Faculty Affairs Committee, Dean's Cabinet, etc. I have also served on numerous NSF panel reviews and performed many DoD proposal reviews. I have not kept track of these activities to provide a chronological list.

In addition to serving on formal committees, I have also established new efforts outside the scope of my regular duties, such as creating student organizations, seminar series, workshops etc... which continue to this day.

SOLE-AUTHOR BOOKS

- Andrew Sarangan. *Nanofabrication: Principles to Laboratory Practice (Optical Sciences and Applications of Light)*. CRC Press, 2016. doi:10.1201/9781315370514
- Andrew Sarangan. *Optical Thin Film Design*. CRC Press, 2020. doi:10.1201/9780429423352

BOOK CHAPTERS

- A. Sarangan. "Quantum mechanics and computation in nanophotonics". *Fundamentals and Applications of Nanophotonics*, pages 45–87. Elsevier, 2016. doi:10.1016/B978-1-78242-464-2.00003-8
- A. Sarangan. "Nanofabrication". *Fundamentals and Applications of Nanophotonics*, pages 149–184. Elsevier, 2016. doi:10.1016/B978-1-78242-464-2.00005-1
- Andrew M. Sarangan. "Design and nanophotonic thin film devices using phase change materials". *Thin Film Nanophotonics*, pages 179–199. Elsevier, 2021. doi:10.1016/b978-0-12-822085-6.00004-2

PUBLICATIONS AND PROCEEDINGS [Google Scholar]

2026

Journals

167. Angelica Drees, Peter R. Stevenson, and Andrew Sarangan. "Experimental demonstration of an approach to designing a metal-dielectric DBR resonant cavity structure". *Applied Optics*, 65(15):5220, 2026. doi:10.1364/ao.586744

166. Yining Liu, Wenjie Yang, Peter Hadchiti, Quentin Hudspeth, Imad Agha, Andrew Sarangan, James S Williams, Jeffrey M Warrender, and Jay Mathews. "Fabricating ohmic contacts to au hyperdoped si for infrared photodetector applications". *Semiconductor Science and Technology*, 41(3):035017, 2026. doi:10.1088/1361-6641/ae51b9

165. Shiqi Luo, Ziliang Huang, Osama Rana, Dylan Morden, Andrew Sarangan, and Imad Agha. "Extended-depth-of-focus fresnel zone plate via genetic algorithm and photothermal lithography". 2026. doi:10.1364/opticaopen.31839793

Proceedings & Presentations

164. Osama Ahmed Rana, Shiqi Luo, Imad Agha, and Andrew M. Sarangan. "Direct patterning of phase change materials (pcms) using the raith picomaster-150 laser beam lithography". *Novel Patterning Technologies 2026*, page 55. SPIE, 2026. doi:10.1117/12.3090890

2025

Journals

163. Roseanna G. Lawandi, Dylan J. Morden, Shiqi Luo, Shivashankar Vangala, Andrew M. Sarangan, and Imad Agha. "Direct laser writing lithography of photo-insensitive durable gst thin films with near 100*Light: Advanced Manufacturing*, 6(4):805, 2025. doi:10.37188/lam.2025.075

Proceedings & Presentations

162. Maryam Alsaud and Andrew Sarangan. "Resonant cavity enhancement of graphene-based Schottky barrier photodiodes". *Infrared Technology and Applications LI*, page 68. SPIE, 2025. doi:10.1117/12.3057022

2024

Journals

161. Yining Liu, Wenjie Yang, Quentin Hudspeth, Andrew Sarangan, Imad Agha, James S. Williams, Jeffrey M. Warrender, and Jay Mathews. "Enhancing performance of au-hyperdoped si photodetectors for infrared detection". *Journal of Applied Physics*, 135(23), 2024. doi:10.1063/5.0198543

160. Abtin Ataei, Paul McManamon, and Andrew Sarangan. "Performance analysis of six electro-optical crystals in a high-bandwidth traveling wave mach-zehnder light modulator". *Photonics*, 11(6):498, 2024. doi:10.3390/photonics11060498

159. Roseanna G. Lawandi, Dylan Morden, Imad Agha, Shivashankar Vangala, and Andrew M. Sarangan. "VO_2 wire grid polarizers for MWIR applications". *Journal of the Optical Society of America B*, 41(3):744, 2024. doi:10.1364/josab.512439

158. Roseanna G. Lawandi, Zhanibek Bolatbek, Imad Agha, Keigo Hirakawa, and Andrew M. Sarangan. "Continuously variable fourier filters fabricated using varying angle glancing angle deposition for chip-scale spectroscopy". *Applied Optics*, 63(6):1517, 2024. doi:10.1364/ao.514319

Proceedings & Presentations

157. Ming Wei, Cullen Bradley, Anna Gnacek, Andrew Sarangan, and Paul F. McManamon. "Characterization of discrete amplification photon detector (dapd) for long-range lidar applications". *Laser Radar Technology and Applications XXIX*. SPIE, 2024. doi:10.1117/12.3013526

2023

Journals

156. Md Shah Alam, Ryan Laing, Zhanibek Bolatbek, Remona Heenkenda, Rudra Gnawali, Tamara E. Payne, Andrew Sarangan, Joshua R. Hendrickson, and Imad Agha. "Fast cycling speed with multimillion cycling endurance of ultra-low loss phase change material (sb2se3) by engineered laser pulse irradiation". *Advanced Functional Materials*, 2023. doi:10.1002/adfm.202310306

155. Roseanna G. Lawandi, Trent Malone, Joshua A. Burrow, Joshua R. Hendrickson, Shivashankar Vangala, Andrew Sarangan, and Imad Agha. "Fabrication, characterization and numerical modeling of Sb_2Se_3 nano-patterned structures". *Optical Materials Express*, 13(12):3428, 2023. doi:10.1364/ome.504959

154. Joshua A. Burrow, Roseanna G. Lawandi, Andrew Sarangan, and Imad Agha. "Electrically addressable tungsten doped phase change device in a through pixel configuration". *Optical Materials Express*, 13(4):1131, 2023. doi:10.1364/ome.486073

Proceedings & Presentations

153. Angelica Drees, Peter Stevenson, and Andrew M. Sarangan. "Deposition and characterization of distributed feedback resonant-cavities with complex index active layers". *Nanoengineering: Fabrication, Properties, Optics, Thin Films, and Devices XX*. SPIE, 2023. doi:10.1117/12.2681693

152. Roseanna G. Lawandi, Zhanibek Bolatbek, Imad Agha, Keigo Hirakawa, and Andrew M. Sarangan. "Single-shot spectroscopy using continuously variable filters". *Nanoengineering: Fabrication, Properties, Optics, Thin Films, and Devices XX*. SPIE, 2023. doi:10.1117/12.2681657

151. Joshua A. Burrow, Kimani C. Toussaint, Andrew Sarangan, and Imad Agha. "Reconfigurable opto-chirality enabled by chalcogenide phase change nanomaterials". *International Workshop on Thin Films for Electronics, Electro-Optics, Energy and Sensors 2022*. SPIE, 2023. doi:10.1117/12.2645974

150. Joshua A. Burrow, Md Shah Alam, Evan M. Smith, Riad Yahiaoui, Ryan Laing, Piyush J. Shah, Thomas Searles, Shivashankar Vangala, Joshua R. Hendrickson, Andrew Sarangan, and Imad Agha. "Reconfigurable chiral phase change nanomaterials". *CLEO 2023*. Optica Publishing Group, 2023. doi:10.1364/cleo_si.2023.sm3h.6

2022

Journals

149. Roseanna Lawandi, Remona Heenkenda, and Andrew Sarangan. "Switchable distributed Bragg reflector using GST phase change material". *Optics Letters*, 47(8):1937, 2022. doi:10.1364/OL.455220

148. Adam C Stahler, Piyush J Shah, Andrew M Sarangan, and Ioana E Pavel. "Establishing the SERS-based sensing capabilities of silver nanorod thin films fabricated through oblique angle deposition at different temperatures". *Asian Journal of Physics*, 31(2):341–353, 2022

147. Robert T. Busch, Riccardo Torsi, Angelica Drees, David Moore, Andrew Sarangan, Nicholas R. Glavin, Joshua A. Robinson, Jonathan P. Vernon, W. Joshua Kennedy, and Peter R. Stevenson. "Effective optical properties of laterally coalescing monolayer MoS_2". *The Journal of Physical Chemistry Letters*, 13(25):5808–5814, 2022. doi:10.1021/acs.jpclett.2c01292

146. Gary A. Sevison, Trent Malone, Remona Heenkenda, Joshua A. Burrow, Andrew Sarangan, Joshua R. Hendrickson, and Imad Agha. "Independent measurement of phase and amplitude modulation in phase change material-based devices". *Optical Materials Express*, 12(7):2899, 2022. doi:10.1364/ome.463337

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