

Saif Islam

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PROFESSIONAL PREPARATION

Ph.D.	Electrical Engineering	University of California, Los Angeles, CA	2001
M.S.	Electrical Engineering	University of California, Los Angeles, CA	1999
M.Sc.	Physics	Bilkent University, Ankara, Turkey	1996
B.Sc.	Physics	Middle East Technical University, Turkey	1994

ACADEMIC APPOINTMENTS

Director, CITRIS and the and the Banatao Institute, UC Davis, CA	2022-Pres
Professor, Electrical and Computer Eng. Dept, University of California, Davis, CA	2011-Pres
Chair of the Electrical and Computer Eng. Dept, Univ of California, Davis	2017-2020
Director, Northern California Nanotechnology Center (NCNC), NCNC was renamed to Center for Nano and Micro Manufacturing (CNM2)	2012-2015
Vice Chair for Undergraduate Affairs, Department of ECE, UC Davis, CA	2011-2013
Associate Professor, Department of ECE, University of California, Davis, CA	2008-2011
Assistant Professor, Department of ECE, University of California, Davis, CA	2004-2008
Affiliate Faculty, Berkeley Sensors & Actuator Center (BSAC), UC Berkeley	2005-2014
Adjunct Assistant Professor, Electrical Engineering, San Jose State University, CA	2002-2003
Graduate Student Researcher, University of California, Los Angeles, CA	1997-2000
Graduate Student Researcher, Bilkent University, Ankara, Turkey	1995-1997
Undergraduate Tutor, Math and Physics, Middle East Technical Univ, Ankara, Turkey	1993-1994

INDUSTRIAL/ENTREPRENEURIAL EXPERIENCES

President and CTO, Co-Founder, Atocera, Inc. Davis, CA	2016-2019
CTO and Co-founder, Flexstrata, Inc., Sacramento, CA	2010-2011
Research Fellow, Quantum Science Research, Hewlett-Packard Labs, CA	2002-2004
Senior Scientist, Advanced Optical Devices, Gazillion Bits, Inc., San Jose, CA	2001-2002
Staff Scientist, Optical Network Research, JDS Uniphase Corporation/SDL Inc., CA	2000-2001
Consultant, Abbott Cardiovascular, Santa Clara, CA	2012-2013
Consultant, Hewlett-Packard Labs, Palo Alto, CA	2004-2012

CORPORATE TECHNICAL ADVISORY BOARDS

Member, Board of Directors, Colr Inc, San Jose, CA	2010-2020
Technical Advisor, Qualcomm, San Diego, CA	2010-2013
Technical Advisor, Bloo Solar Inc., Sacramento, CA	2006-2008
Member of the Technical Advisory Board, Banpil Photonics Inc., Santa Clara, CA	2005-2012
Member, Board of Advisors, Maslin Capital, Dhaka Bangladesh	2016-2020

NON-PROFIT ORGANIZATION EXPERIENCES

Member of Board of Directors, Davis Community Meals and Housing, Davis, CA	2014-2017
Member, Board of Directors, Inspiring South Asian Youth (ISAY), Patterson, NJ	2013-2016
Regional Director, Greater Sacramento, Pacifica Institute, Sacramento, CA	2009-2012
Co-founder, Society for Intercultural Research and Friendship, (SIRF), Ankara	1992-1996

HONORS AND AWARDS

- Aden and Marjorie Meinel Technology Achievement Award: SPIE, 2024
- Outstanding Senior Research Faculty Award: College of Engineering, UC Davis, 2022
- **Elected Fellow of Professional Societies:**
 1. Institute of Electrical and Electronics Engineers (IEEE), 2020
 2. American Association for the Advancement of Science (AAAS), 2018
 3. Optical Society of America (OSA), 2018
 4. Society of Photo-Optical Instrumentation Engineers (SPIE), 2017
 5. National Academy of Inventors (NAI), 2014
- Outstanding Mid-Career Research Faculty Award, COE, UC Davis, 2012
- Academic Senate Distinguished Teaching Award: Highest Teaching Honor University of California Davis Bestows on its Faculties, 2010
- IEEE Best Paper Award, IEEE ICECE, 2010
- IEEE Outstanding Instructor of the Year, IEEE Davis Branch, 2009 & 2005
- Outstanding Junior Faculty Award, College of Engineering, UC Davis, 2006
- Best Ph.D. Dissertation Mentor: Nano-bridges for 3D Gate-All-Around Field Effect Transistors, 2014
- NSF Faculty Early Career (CAREER) Development Award (2006)
- Semiconductor Nanowire Researchers to Watch: Nanolab Watch Journal, 2006
- IEEE-LEOS Graduate Fellowship 2000: IEEE Laser and Electro-Optic Society, 12 worldwide
- Chancellor's Dissertation Fellowship: University of California, 2000-01
- Turkish-Bangladesh Cultural Exchange Fellowship, 1990-94
- President's Award, 1989: For ranking 1st in the HSC exam in entire Bangladesh
- Student of the Year Award, 1988: For ranking 1st in the SSC exam in Bangladesh
- National TV Debate Championship: Bangladesh, 1987

ADMINISTRATIVE EXPERIENCE

- **DIRECTOR, CITRIS and the and the Banatao Institute, UC Davis, CA**2022
- **DEPARTMENT CHAIR**2017-2020
Electrical and Computer Engineering Department, University of California, Davis.
- **DIRECTOR, Center for Nano and Micro Manufacturing (CNM2)** formerly known as Northern California Nanotechnology Center (NCNC)2012-2015

- **VICE CHAIR for undergraduate affairs**2011-2013
Electrical and Computer Engineering Department, University of California, Davis.
- **CO-FOUNDER, PRESIDENT & CTO**2016-2020
Atocera, Inc. Davis, CA

PROFESSIONAL SERVICES

Multi-University Research Leadership Roles

- Led two NSF Engineering Research Center (ERC) initiatives with 6 universities (UC Davis, Purdue, USC, MIT, NCAT and FIU) and 30+ professors on Extreme Integrated Systems during 2012-15
- Research partnership and collaboration between UC Davis and Lawrence Berkeley National Lab, in topical areas including Energy and Nano and Nano- biosciences, 2020-21
- Lead Principal Investigator for Universities (UC Davis, UCLA and MIT): DARPA, “Photon Trap Structures for Quantum Advanced Detectors (PT-SQUAD) \$8M program across three universities, and two companies (HRL Labs and DRS Sensors) 2008-2010
- Led UC Davis PIs in the National Institute for Nano Engineering (NINE) initiative sponsored by Sandia National Labs, USA. \$20M program across several universities and 30 professors (2008-2012)

International Engagement:

- **National Chung Hsing University, Taiwan:** Initiated a joint MS program.
- **Nara Institute of Science and Technology, Japan:** Joint PhD supervision and student exchange program, UCD-NAIST AOC with Dean Winston Ko. 2008-2014.
- **UC Davis-Middle East Tech University (METU)** Agreement of Cooperation, 2006.
- **Tohoku University, Japan:** Joint Symposium on ‘The Research and development activities of metal and alloyed nanoparticles-based technologies in Japan and the USA’ funded by the New Energy and Industrial Technology Development Organization (NEDO, Japan), 2006. Student exchange program between Tohoku University and UC Davis 2006-2012.

Outreach, Mentoring and Counseling:

- **Students from Underrepresented Communities:** Student outreach activities with middle and high school students from predominantly underprivileged and socio-economically impacted neighborhood of downtown Oakland, CA and Orangevale CA. Additional students from Oliver Wendell Holmes Jr. High, Davis CA along with their science teachers would join us in my lab.
- **Alum Rock Counseling Center, San Jose CA:** Offered mentoring support to at-risk students attending William C. Overfelt High School, San Jose CA (2001-04).
- **Elmwood Jail Outreach Programs:** Offered support to the inmates Santa Clara County Department of Corrections.

Selected University Services

Department Services:

- Department Chair, Electrical and Computer Engineering Department: 2017-20

- Chair/member: Faculty Recruitment Committee, 2016-17, 2008-15
- Chair/member: Teaching Assignment Committee, 2017-20, 2011-13
- Member, Budget & Resource Allocation Committee, 2011-13
- Member, Graduate Program Executive Committee, 2010-13
- Member, Undergraduate Program Committee, 2010-13

College of Engineering, UC Davis Services

- Member, Faculty Personnel Committee, 2020-21
- Member, Executive Committee of the Center for Micro and Nanofabrication, 2016-20
- Chair, Research and Library Committee, 2015-16
- Member, Recruitment Committee of the MSE Department 2014-15, 2018-19
- Co-Chair, Engineering Research Center (ERC) Proposal, 2014-15
- Member, Manufacturing for the 21st Century, 2011-12
- Representative, COE: Undergraduate Education Policy (Fall & Winter) 2013-14
- Member, Northern California Nanotechnology Center (NCNC), Faculty Advisory Committee 2011-12

UC Davis and Other Universities

- Member, Committee on Budget and Planning, UC Davis, 2020-21
- Member, Research Core Advisory Council (RCAC), UC Davis, 2020-21
- Member, Dean Search Advisory Committee, UC Davis College of Engineering, 2014-15
- Member, Library Committee, UC Davis 2015-2016
- Graduate Council Courses Subcommittee, ICMS Curriculum Subcommittee, 2010-11
- Ad Hoc Committee on Tenure Decision, UC Irvine 2010
- Member of External Review Committee, College of Engineering, UC Irvine, 2010
- Member, Curriculum Review Committee, BRAC University, Bangladesh, 2020

Professional Societies and Government Agencies

- IEEE Fellow Evaluation Committee of Photonics Society, Member, 2020
- National Academy of Inventors (NAI) Fellow Evaluation Committee, Member, 2016
- SPIE Early Career Achievement Awards Committee, Member, 2012
- National Nanotechnology Initiative (NNI), Nanoscale Science, Engineering and Technology Subcommittee, Member, 2009
- National Institute for Nano-Engineering (NINE), Sandia National Laboratories, Member 2009-2011
- International Review Panel, National Commission for Scientific and Technological Research (CONICYT), Chile 2013-20

Journal Editorial Activities

- Senior Editor: IEEE Access, 2020-present
- Guest Editor, MRS Bulletin, Special issue on Materials for Ultra-Efficient, High-Speed Optoelectronics, May 2022
- Associate Editor: IEEE Photonic Journal, 2015-2020
- Associate Editor: Nano Communications, 2011-present
- Associate Editor, IEEE Access, 2016-2020

- Associate Editor, IEEE Transaction on Nanotechnology, 2014-17
- Editorial Board, Science of Advanced Materials, 2010-15
- Editorial Board, Nano Communications, 2011-15
- Editorial Board, Nanoscience and Nanotechnology Letters, 2008-12
- Guest Editor, J of Nanophotonics: Special Issue Nanophotonics for Comm, 2007-08
- Guest Editor, Applied Physics A. Special Issue Dedicated to Metamaterials, 2006-07
- Guest Editor, Int. J. of Nanotechnology. Special issue on Nanosensors, 2006-07

Conference Organization: Leadership Role

Chaired/Co-Chaired 33 professional conferences since 2004

Symposium Co-organizer – Society of Photo-Optical Instrumentation Engineers (SPIE)

- Micro-Nanotechnology Sensors, Systems, & Applications, DCS 2009-2020
- Low-Dimensional Materials and Devices, 2014-2020
- Nanoepitaxy: Homo and Heterogeneous Nanomaterials, 2009-2014
- Nanosensing Materials, Devices and Systems, 2004-2007
- Nanomaterial Synthesis and Integration for Sensors, Electronics, 2005-2007
- Nanophotonics for Communication: Materials, Devices and Systems, 2006-07

Symposium Co-organizer: Material Research Society (MRS)

- Nanocontacts–Emerging Materials & Process for Ohmicity & Rectification, 2012
- Workshop on Nanocontacts and Nanointerconnects, 2010
- Negative Index Materials: From Microwave to Optical, 2006

Technical Meetings – Program Committee Member

- Photonics West, Quantum Sensing and Nano Electronics and Photonics 2020
- SPIE DSC Terahertz Physics, Devices and Systems: Advance Applications, 2007-2015
- Energy Harvesting and Storage: Materials, Devices, and Applications 2010-2020
- International Workshop on Advanced Materials for Sensors, Electronic Devices and Renewable Energy (2012), Saudia Arabia, 2012
- Wide Bandgap Power and Energy Devices and Applications, 2016-2017
- The 8th Pacific Rim Conference on Ceramic and Glass Technology (ACerS PACRIM 8) 2009, Symposium 7: Nanostructured Materials and Systems.
- OSA Asia Optical Fiber Communication and Optoelectronic Exposition & Conference (AOE), Shanghai, China, 2008

PLENARY, KEYNOTE, AND DISTINGUISHED LECTURES

- IEEE 2nd International Conf. on Advancement in EEEE (ICAEEE 2022), 24-26 Feb 2022.
- Optical Society of America Webinar, August 19, 2021.
- International Colloquium, Recent Advances in Photosensors Technology: Photon Trapping by Black Holes in Silicon, American University of Sharjah, UAE Nov 24, 2020.
- Bending, trapping and slowing down light beams in thin films for ultrafast, highly sensitive detection and efficient energy conversion, Applied Materials Lab, December 16, 2019.
- National Chung Hsing University Larry N. Vanderhoef Distinguish Seminar, Nov 12, 2019.
- 6th Nanoenergy Conference, Universiti Tenaga Nasional, Malaysia 27 July 2019.

- Photonics and Sensor Workshop, University of London, UK June 27-29, 2019.
- International Nanotechnology and Nanoscience Conference, Sept 23-24, Chicago, IL 2019.
- Distinguished Seminar Series, TE Connectivity, August 28, 2018.
- Micro- and Nanotech Sensors, Systems, and Applications, Baltimore, MD, April 14, 2019
- IEEE International Conf. on Telecommunication and Photonics (ICTP), Dhaka, Dec. 26, 2017.
- IEEE Region 10 Humanitarian Technology Conference BUET, Bangladesh, Dec 21, 2017.
- Nano-Power Systems Meeting, Lawrence Livermore National Laboratory, April 21, 2016.
- Semitherm-31, Intel Corporation, Santa Clara, March 2015.
- Int. Semiconductor Science and Tech Conf. (ISSTC-2014) Istanbul, January 15 2014
- HTCMC8 (High Temperature Ceramic Matrix Composites), Sept 22, Xi'an, China, 2013
- International Workshop n Nanofabrication, Bilkent, Ankara Turkey, 2013
- International Workshop on Advanced Materials for Sensors, Electronic Devices and Renewable Energy (IWASER-2012), Najran University, Saudi Arabia from 14-16 May, 2012
- IEEE San Francisco Bay Area Nanotechnology Council, September 20, 2011
- Distinguished lecturer, Univ of Washington, Seattle, October 15, 2010
- Applied Physics Colloquium, Caltech, Pasadena, CA October 26, 2010
- Max-Planck Inst, Laserion, Munich July 9, 2010
- Nanotechnology Colloquium, University of Cologne, Germany, July 5, 2010
- Distinguished lecturer, Qualcomm, San Diego, April 20, 2010.
- Nanotechnology Colloquium, NAIST: Nara Institute of Science & Tech, Japan, Oct 18 2009
- 8th Pacific Rim Conf on Ceramic & Glass Tech, PACRIM8, May 31, 2009, Vancouver, Canada
- International Symposium on Advanced Materials, Islamabad Pakistan, Aug 8-12, 2009
- IEEE International Nanoelectronics Conference (INEC) 2008, Shanghai, 24–27th Mar 2008.
- The Inst of Materials Research and Engineering (IMRE), Agency for Science, Technology and Research (A*STAR), Aug 06, 2007
- International Symposium on Frontiers in Nanoscale Science, Technology and Education, Cochin, India, August 16-19, 2006
- NATO Nanotech. Research Forum, October 16-20, 2006, Middle East Tech Univ., Ankara, Turkey.
- International Symposium on Metal and Alloy Nanomaterial Based Applied Technologies in Japan-US, Tohoku Univ, Japan Jan. 12, 2006

INVITED JOURNAL AND MAGAZINE PAPERS

1. Materials for Ultra-Efficient, High-Speed Optoelectronics, MRS Bulletin, May 2022.
2. Ultrawide-Bandgap Semiconductors: Research Opportunities and Challenges, *Advanced Electronic Materials*, 4, 1600501, 2018.
3. A New Paradigm in High-Speed and High-Efficiency Silicon Photodiodes for Communication—Part I: Enhancing Photon–Material Interactions via Low-Dimensional Structures” *IEEE Transaction on Electron Devices* 65, no. 2 372, 2018.
4. A New Paradigm in High-Speed and High-Efficiency Silicon Photodiodes for Communication—Part II: Device and VLSI Integration Challenges for Low-Dimensional Structures, *IEEE Transactions on Electron Devices* 65, no. 2, 382, 2018.
5. A Perspective on Nanowire Photodetectors: Current Status, Future Challenges and Opportunities, *IEEE Jour. of Sel Topics in Quantum Electronics*, 17, no 4, p1002, 2011.

6. Nanowire-based devices combining light guiding & photodetection, *Applied Physics A*, 105, 2, p311 2011.
7. Nanoscale Materials and Devices for Future Communication Networks, *IEEE Communications Magazine*, p112, June 2010.
8. A 14 ps full width at half maximum high-speed photoconductor fabricated with intersecting InP nanowires on an amorphous surface, *Appl. Phys A*, 91, 1–5 2008.
9. The all-pervading nanosensors, *International J. of Nanotechnology Special issue on Nanosensors*, 5, No. 4/5, 2008.
10. Issues on nano-imprint lithography with a single-layer resist structure, *App Phys A* 81, 1331, 2005.
11. Distributed Balanced Photodetectors for RF photonic Link", *International. Journal of High-Speed Electronics and Systems*, World Scientific 10 (1), pp 281-297, 2000

RESEARCH FUNDING SUMMARY

Dr. Islam has served as PI or Co-PI on government research grants totaling more than \$20M (million) dollars. His research has been funded by the National Science Foundation (NSF), Defense Advanced Research Projects Agency (DARPA), the Army Research Labs (ARL), Department of Energy (DOE), National Institute of Health (NIH), US Army Night Vision & Electronic Sensors Directorate, CITRIS. He received more than \$2M dollars of research support from industry, including funding from HP Labs, Qualcomm, Agilent Technologies, Banpil Photonics, RTI International, Sandia National Labs and several startup companies.

JOURNAL PUBLICATIONS

1. Ahamed, Ahasan, Amita Rawat, Lisa N. McPhillips, Ahmed S. Mayet, and M. Saif Islam. "Unique Hyperspectral Response Design Enabled by Periodic Surface Textures in Photodiodes." *ACS Photonics*, 2024.
2. Tsubokawa, Makoto, and M. Saif Islam. "Design of a metasurface deflector for guided absorption enhancement in a Si PIN photodiode." *Optics Express* 32.12, 21121, 2024.
3. M. Saif Islam. Taming photons to sense fast and faint infrared signals. *Nature Photonics*, 17(7): 554-555, 2023.
4. S. Mayet, A., Das, B., Afzal, H., Zaman, S., Ghandiparsi, S., Dhar, N. K., ... & Hossain, M. (2024). Finite-Difference Time-Domain Simulations of Photon-Trapping Nanohole Arrays for Enhanced Optical Absorption in Ultrahigh-Speed GaAs Photodetectors. *ACS Applied Nano Materials*, 7(9), 10037-10045, 2024.
5. Hamadou, D.B., Ghandiparsi, S., Elfakharany, R., Landolsi, T., Elrefaie, A.F., Ahamed, A., Mayet, A.S., Perez, C.B., Devine, E.P., Wang, S.Y. and Islam, M.S., 3D Lumerical simulation of silicon photodiodes with microholes for high-speed short-reach intra-datacenter interconnects. *Applied Optics*, 62(24), pp.6407-6416, 2023.
6. Devine, Ekaterina Ponizovskaya, Ahasan Ahamed, Ahmed S. Mayet, Amita Rawat, Aly F. Elrefaie, Toshishige Yamada, Shih-Yuan Wang, and M. Saif Islam. "Cmos image sensor with micro–nano holes to improve nir optical efficiency: Holes on top surface versus on bottom." *IEEE Sensors Journal* 23, no. 17 19256-19261, 2023.

7. Wayesh Qarony, Ahmed S. Mayet, Ekaterina Ponizovskaya-Devine, Soroush Ghandiparsi, Cesar Bartolo-Perez, Ahasan Ahamed, Amita Rawat, Hasina Publications Page 31 of 58 H. Mamta, Toshishige Yamada, Shih-Yuan Wang, M. Saif Islam. Achieving higher photoabsorption than group III-V semiconductors in ultrafast thin silicon photodetectors with integrated photon-trapping surface structures. *Advanced Photonics Nexus*, 2(5): 056001 1-11, 2023.
8. Amita Rawat, Ahasan Ahamed, Cesar Bartolo-Perez, Ahmed S. Mayet, Lisa N. McPhillips, and M. Saif Islam. Design and Fabrication of High-Efficiency, Low-Power, and Low-Leakage Si-Avalanche Photodiodes for Low-Light Sensing. *ACS Photonics*, 10(5): 1416-1423 2023.
9. E. Ponizovskaya-Devine, Ahasan Ahamad, Ahmed Mayet, Amita Rawat, Aly F. Elrefaie, Toshishige Yamada, Shih-Yuan Wang, and M. Saif Islam. CMOS Image Sensor With Micro-Nano Holes to Improve NIR Optical Efficiency: Holes on Top Surface Versus on Bottom. *EEE Sensors Journal*, 23(17): 19256-19261, 2023.
10. Ekaterina Ponizovskaya-Devine, Ahmed S. Mayet, Amita Rawat, Ahasan Ahamed, Shih-Yuan Wang, Aly F. Elrefaie, Toshishige Yamada, M. Saif Islam. Single microhole per pixel for thin Ge-on-Si complementary metal-oxide semiconductor image sensor with enhanced sensitivity up to 1700 nm. *Journal of Nanophotonics*, 17(1): 016012-1-11, 2023.
11. D. B. Hamadou, S. Ghandiparsi, R. Elfakharany, T. Landolsi, A. F. Elrefaie, A. Ahamed, A. S. Mayet, C. B. Perez, E. P. Devine, S. Y. Wang, and M. Saif Islam. 3D Lumerical simulation of silicon photodiodes with microholes for highspeed short-reach intra-datacenter interconnects. *Applied Optics*, 62(24): 6407-6416, 2023
12. Galan Moody, and M. Saif Islam. "Materials for ultra-efficient, high-speed optoelectronics." *MRS Bulletin*, 1-10, 2022.
13. Cesar Bartolo-Perez, Ahasan Ahamed, Ahmed S. Mayet, Amita Rawat, Lisa McPhillips, Soroush Ghandiparsi, Julien Bec, Gerard Ariv±o-Estrada, Simon Cherry, Shih-Yuan Wang, Laura Marcu, and M. Saif Islam, "Engineering the gain and bandwidth in avalanche photodetectors", *Optics Express*, 30 (10):16873-82, 2022.
- 14.
15. M. Saif Islam. Taming photons to sense fast and faint infrared signals. *Nature Photonics*, 17(7): 554-555, 2023.
16. Wayesh Qarony, Ahmed S. Mayet, Ekaterina Ponizovskaya-Devine, Soroush Ghandiparsi, Cesar Bartolo-Perez, Ahasan Ahamed, Amita Rawat, Hasina Publications Page 31 of 58 H. Mamta, Toshishige Yamada, Shih-Yuan Wang, M. Saif Islam. Achieving higher photoabsorption than group III-V semiconductors in ultrafast thin silicon photodetectors with integrated photon-trapping surface structures. *Advanced Photonics Nexus*, 2(5): 056001 1-11, 2023.
17. Amita Rawat, Ahasan Ahamed, Cesar Bartolo-Perez, Ahmed S. Mayet, Lisa N. McPhillips, and M. Saif Islam. Design and Fabrication of High-Efficiency, Low-Power, and Low-Leakage Si-Avalanche Photodiodes for Low-Light Sensing. *ACS Photonics*, 10(5): 1416-1423 2023.
18. E. Ponizovskaya-Devine, Ahasan Ahamad, Ahmed Mayet, Amita Rawat, Aly F. Elrefaie, Toshishige Yamada, Shih-Yuan Wang, and M. Saif Islam. CMOS Image Sensor With Micro-Nano Holes to Improve NIR Optical Efficiency: Holes on Top Surface Versus on Bottom. *EEE Sensors Journal*, 23(17): 19256-19261, 2023.
19. Ekaterina Ponizovskaya-Devine, Ahmed S. Mayet, Amita Rawat, Ahasan Ahamed, Shih-Yuan Wang, Aly F. Elrefaie, Toshishige Yamada, M. Saif Islam. Single microhole per pixel for thin

- Ge-on-Si complementary metal-oxide semiconductor image sensor with enhanced sensitivity up to 1700 nm. *Journal of Nanophotonics*, 17(1): 016012-1-11, 2023.
20. D. B. Hamadou, S. Ghandiparsi, R. Elfakharany, T. Landolsi, A. F. Elrefaie, A. Ahamed, A. S. Mayet, C. B. Perez, E. P. Devine, S. Y. Wang, and M. Saif Islam. 3D Lumerical simulation of silicon photodiodes with microholes for highspeed short-reach intra-datacenter interconnects. *Applied Optics*, 62(24): 6407-6416, 2023
 21. Galan Moody, and M. Saif Islam. "Materials for ultra-efficient, high-speed optoelectronics." *MRS Bulletin*, 1-10, 2022.
 22. Cesar Bartolo-Perez, Ahasan Ahamed, Ahmed S. Mayet, Amita Rawat, Lisa McPhillips, Soroush Ghandiparsi, Julien Bec, Gerard Ariv±o-Estrada, Simon Cherry, Shih-Yuan Wang, Laura Marcu, and M. Saif Islam, "Engineering the gain and bandwidth in avalanche photodetectors", *Optics Express*, 30 (10):16873-82, 2022.
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 24. M. Saif Islam. Taming photons to sense fast and faint infrared signals. *Nature Photonics*, 17(7): 554-555, 2023.
 25. Wayesh Qarony, Ahmed S. Mayet, Ekaterina Ponizovskaya-Devine, Soroush Ghandiparsi, Cesar Bartolo-Perez, Ahasan Ahamed, Amita Rawat, Hasina Publications Page 31 of 58 H. Mamtaz, Toshishige Yamada, Shih-Yuan Wang, M. Saif Islam. Achieving higher photoabsorption than group III-V semiconductors in ultrafast thin silicon photodetectors with integrated photon-trapping surface structures. *Advanced Photonics Nexus*, 2(5): 056001 1-11, 2023.
 26. Amita Rawat, Ahasan Ahamed, Cesar Bartolo-Perez, Ahmed S. Mayet, Lisa N. McPhillips, and M. Saif Islam. Design and Fabrication of High-Efficiency, Low-Power, and Low-Leakage Si-Avalanche Photodiodes for Low-Light Sensing. *ACS Photonics*, 10(5): 1416–1423 2023.
 27. E. Ponizovskaya-Devine, Ahasan Ahamad, Ahmed Mayet, Amita Rawat, Aly F. Elrefaie, Toshishige Yamada, Shih-Yuan Wang, and M. Saif Islam. CMOS Image Sensor With Micro–Nano Holes to Improve NIR Optical Efficiency: Holes on Top Surface Versus on Bottom. *EEE Sensors Journal*, 23(17): 19256-19261, 2023.
 28. Ekaterina Ponizovskaya-Devine, Ahmed S. Mayet, Amita Rawat, Ahasan Ahamed, Shih-Yuan Wang, Aly F. Elrefaie, Toshishige Yamada, M. Saif Islam. Single microhole per pixel for thin Ge-on-Si complementary metal-oxide semiconductor image sensor with enhanced sensitivity up to 1700 nm. *Journal of Nanophotonics*, 17(1): 016012-1-11, 2023.
 29. D. B. Hamadou, S. Ghandiparsi, R. Elfakharany, T. Landolsi, A. F. Elrefaie, A. Ahamed, A. S. Mayet, C. B. Perez, E. P. Devine, S. Y. Wang, and M. Saif Islam. 3D Lumerical simulation of silicon photodiodes with microholes for highspeed short-reach intra-datacenter interconnects. *Applied Optics*, 62(24): 6407-6416, 2023
 30. Galan Moody, and M. Saif Islam. "Materials for ultra-efficient, high-speed optoelectronics." *MRS Bulletin*, 1-10, 2022.
 31. Cesar Bartolo-Perez, Ahasan Ahamed, Ahmed S. Mayet, Amita Rawat, Lisa McPhillips, Soroush Ghandiparsi, Julien Bec, Gerard Ariño-Estrada, Simon Cherry, Shih-Yuan Wang, Laura Marcu, and M. Saif Islam, "Engineering the gain and bandwidth in avalanche photodetectors", *Optics Express*, 30 (10):16873-82, 2022.
 32. Alhalaili, Badriyah, Ahmad Al-Duweesh, Ileana Nicoleta Popescu, Ruxandra Vidu, Luige Vladareanu, and M. Saif Islam. "Improvement of Schottky Contacts of Gallium Oxide (Ga₂O₃) Nanowires for UV Applications." *Sensors* 22, no. 5 2048, 2022.

33. Bartolo-Perez, Cesar, C, Chandiparsi S, Mayet AS, Cansizoglu H, Gao Y, Qarony W, Ahmed A, Wang SY, Cherry SR, Islam MS, Ariño-Estrada G "Avalanche photodetectors with photon trapping structures for biomedical imaging applications." *Optics Express* 29.12 19024, 2021.
34. C Bartolo-Perez, W Qarony, S Ghandiparsi, A S Mayet, A Ahamed, Cansizoglu H, Gao Y, Devine EP, Yamada T, Elrefaie AF, Wang SY ad M. Saif Islam, "Maximizing Absorption in Photon-Trapping Ultrafast Silicon Photodetectors", *Adv. Phot. Research*, p.2000190, 2021,
35. Devine EP, Qarony W, Ahamed A, Mayet AS, Ghandiparsi S, Bartolo-Perez C, Elrefaie AF, Yamada T, Wang SY, Islam MS., "Single Microhole per Pixel in CMOS Image Sensors with Enhanced Optical Sensitivity in Near-Infrared." *IEEE Sensors Journal* 21.9, p10556, 2021.
36. Yamada, Toshishige, Ekaterina Ponizovskaya Devine, Soroush Ghandiparsi, Cesar Bartolo-Perez, Ahmed S. Mayet, Hilal Cansizoglu, Yang Gao, Ahasan Ahamed, Shih-Yuan Wang, and M. Saif Islam. "Modeling of nanohole silicon pin/nip photodetectors: Steady state and transient characteristics." *Nanotechnology* (2021).
37. Alhalaili, B., Vidu, R., Mao, H., Kamoun, O. and Islam, M.S., Photoelectrochemical (PEC) etching of Ga₂O₃. *Ceramics International*, 47(1), pp.479-486, 2021
38. Alhalaili, Badriyah, Ryan James Bunk, Howard Mao, Hilal Cansizoglu, Ruxandra Vidu, Jerry Woodall, and M. Saif Islam. "Gallium oxide nanowires for UV detection with enhanced growth and material properties." *Scientific Reports* 10, no. 1 (2020): 1-14.
39. Alhalaili, Badriyah, Howard Mao, Daniel M. Dryden, Hilal Cansizoglu, Ryan James Bunk, Ruxandra Vidu, Jerry Woodall, and M. Saif Islam. "Influence of Silver as a Catalyst on the Growth of β -Ga₂O₃ Nanowires on GaAs." *Materials* 13, no. 23 5377, 2020
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INVITED CONFERENCE PRESENTATIONS, LECTURES & SEMINARS

1. "Trapping and slowing down photons using black holes in silicon for datacom, sensing, and energy conversion", IEEE Boise Section EDS/SSCS Region 6 May 26, 2021.
2. "Ionizing air to trap COVID-19 viruses", International COVID-19 Congress, 2020, IEEE BUET, 9-10 August 2020.
3. "Faculty Positions: How to Prepare", University of Nevada - Reno, February 11, 2021.
4. "How to Prepare for Elevation to IEEE Senior and Fellow Grades", IEEE Young Professions-Students Vitality Enhancement and Engagement Summit, 29-30 May, 2021 (Keynote).
5. "Recent Advances in Photosensors Technology: Photon Trapping by Black Holes in Silicon", International Colloquium, American University of Sharjah, UAE Nov 24, 2020.
6. "Bending, trapping and slowing down light beams in thin films for ultrafast, highly sensitive detection and efficient energy conversion", Applied Materials Lab, December 16, 2019.
7. National Chung Hsing University Larry N. Vanderhoef Distinguish Seminar, Nov 12, 2019.
8. 6th Nanoenergy conference, Universiti Tenaga Nasional, Malaysia 27 July 2019.
9. Optical Society of America Webinar, August 19, 2019.
10. M. Saif Islam, Bending, trapping and slowing down light beams in thin films for ultrafast, highly sensitive detection and efficient energy conversion, Appl Materials Lab, Dec 16, 2019.

11. M. Saif Islam, Bending, trapping and slowing down light beams to enable ultra-fast photodetection and efficient energy conversion, Univ of California Santa Cruz, Nov 25, 2019.
12. M. Saif Islam, Charged Particles Enabled Nano Sensors for Extreme Conditions, National Chung Hsing University Taiwan, November 11, 2019.
13. Bending, trapping and slowing down light beams for ultra-fast photodetection and efficient energy conversion, National Chung Hsing University Larry N. Vanderhoef Distinguished Seminar, November 12, 2019.
14. M. Saif Islam, Advanced technologies for imaging and sensing of faint signals of light, chemicals and bio-agents, Jena-Davis (JEDIS) Alliance of Excellence in Biophotonics, Summer School, UC Davis, August 25, 2019
15. M. Saif Islam, Bending, Trapping and Slowing Down Light Beams to Enable Ultra-high Efficiency in Solar Energy Harvesting, 6th NANOENERGY 2019 conference to be held at Universiti Tenaga Nasional, Malaysia 27-29 July 2019 (Keynote Presentation).
16. M. Saif Islam, Bending, trapping and slowing down light beams Periodic Nanoholes for highly-efficient photovoltaics and ultra-fast photodetection, Dhaka University, July 31, 2019.
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18. M. Saif Islam, Slowing down and trapping of light for highly-sensitive and ultra-fast silicon photonic receivers, Photonics and Sensor Workshop Univ of London, UK June 27-29, 2019.
19. M. Saif Islam, Charged Particles Enabled Nano Sensors for Extreme Conditions, International Nanotechnology and Nanoscience Conference, Sept 23-24, Chicago, IL 2019 (Keynote).
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21. M. Saif Islam, Engineering nanostructures for highly efficient sensing, energy harvesting, storage and computing, TE Connectivity, August 28, 2018.
22. M Saif Islam, Single Photon Avalanche Photodetectors Enabled by Light Bending and Photon Trapping, Micro- and Nanotechnology Sensors, Systems, and Applications XI, April 14-18, Baltimore, MD, 2019
23. M Saif Islam, Black holes enabled light bending and trapping in ultrafast silicon photodetectors, Defense and Commercial Sensing, Micro-and Nanotechnology Sensors, Systems, and Applications X, April 15-19, 2018.
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31. M. Saif Islam, "Peeling Atoms by Quantum Nanostructures with Controlled Surface Disorders: Highly Selective Bio-Chemical Sensing and Cost-effective Pollution Control", International Semiconductor Science and Technology Conference" (ISSTC-2014) Istanbul, January 1-15 2014 (Keynote).
32. M. Saif Islam, "Engineering and Transfer-Printing of 1D/2D Semiconductor/polymer Micro/nano-Composites for Energy Conversion, Storage and Sensing", HTCMC8, Sept 22-28, Xi'an, China, 2013 (Keynote).
33. M. Saif Islam, "High-throughput Transfer Printing of Micro and Nanosystems for Energy Conversion, Storage, Sensing and Pollution Control", International Workshop on Nanotechnology, Renewable Energy & Sustainability (NRES) Xi'an, China by Xi'an Jiaotong University, China, Sept 25, 2013 (Keynote)
34. M. Saif Islam, "Engineering and Transfer-Printing of Micro-Nanodevices for Energy Conversion, Storage, Sensing and Imaging: Heterogeneously Integrated Multi-functional Systems", International Workshop n Nanofabrication, Bilkent, Ankara Turkey (Keynote).
35. M. Saif Islam, "Micro/Nanoscale Materials and Devices for Energy Conversion, Storage and Sensing: Heterogeneously Integrated Multi-functional Systems via Transfer-Printing" UPM, Kuala Lumpur, Malaysia, Oct 1, 2013.
36. M. Saif Islam, "Semiconductor surgical and shaving blades" Tech Transfer Forum organized by UC Office of the President, April 2, 2013.
37. M. Saif Islam, "Nanostructured Metal Oxides for Advanced Applications" MRS Spring Meeting, 2013.
38. M. Saif Islam, "Engineering Semiconductor Nanostructures for High Performance and Ultra selective Sensing", International Workshop on Advanced Materials for Sensors, Electronic Devices and Renewable Energy (IWASER-2012), Collaborative Research Centre for Sensors and Electronic Devices, Najran University, Saudi Arabia from 14-16 May, 2012 (Keynote).
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41. M. Saif Islam, "Micro- and Nano-structured Semiconductor Devices on Amorphous Substrates for Low-cost Energy Conversion, Sensing and Displays", University of Washington, Seattle, October 15, 2010.

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47. M. Saif Islam, "Massively Parallel and Mass-Manufacturable Techniques for 1D Nano-material Synthesis, Device Fabrication and System Integration", International Workshop on Cleanroom Training, UNAM, Bilkent University, Ankara, June 24, 2010.
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50. M. Saif Islam, "Recent Developments and Current Challenges in Interfacing and CMOS Compatible Integration of 1D Nanowires in Devices and Circuits", Qualcomm, San Diego, April 20, 2010.
51. M. Saif Islam, Matthew Ombaba & Logeeswaran VJ, "Single Crystal Semiconductor Devices on Amorphous Substrates for Efficient and Low-cost Energy Conversion, Sensing and Displays" Berkeley Sensors and Actuator Center, April 13, 2010.
52. M. Saif Islam and Logeeswaran VJ, "A Business Case for Nanotechnology: Nanodevices for Energy Conversion", MRS Fall Meeting, Boston, Nov 30-Dec 4, 2009 MA USA.
53. M. Saif Islam, "Nanotechnology Revolutionary Opportunities for Changing Our World" Pacific Technology School, Orangevale, CA Oct 29, 2009.
54. M. Saif Islam, "Nuts & Bolts of Electrical and Computer Engineering: A First Year Student's Introduction", UC Davis, Nov 17, 2009.
55. M. Saif Islam, "Integrating Semiconductor Nanowires in Devices and Circuits: Challenges in Mass-manufacturing", NAIST: Nara Institute of Science & Tech, Japan, October 18-22, 2009.
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- Cost Energy via Nanotechnology”, 11th International Symposium on Advanced Materials, Islamabad Pakistan, Aug 8-12, 2009 (Keynote).
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 60. M. Saif Islam, "Mass-manufacturable integration schemes for 1D nanostructure in devices and circuits", IEEE International Nanoelectronics Conference (INEC) 2008, Shanghai, 24th – 27th March 2008.
 61. M. Saif Islam, "Heteroepitaxial growth dynamics and device applications of bridging InP nanowires between Si surfaces" Workshop on Nanoscale Epitaxial Semiconductor Structures (NESS), Albuquerque, NM, Sept. 26-27, 2007.
 62. M. Saif Islam, "Epitaxially Integrated Semiconductor Nanowires for Nanoscale Electronics, Photonics and NEMS", IEEE-LEOS Annual Meeting, 21-25 Oct., FL, 2007.
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 64. M. Saif Islam "Nanomanufacturing of Nanowire Devices" Nat Univ Singapore, Aug 07, 2007.
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 68. M. Saif Islam, "Integrating and Accurate Positioning of 1D Nanowires in Devices and Circuits: Recent Developments, Current Challenges and Future Opportunities", International Symposium on Frontiers in Nanoscale Science, Technology and Education, Cochin, India, August 16-19, 2006.
 69. M. Saif Islam, "Nanotech Research Collaboration, UC Davis & HP Lab 2004-2006, CITRIS Annual Review Meeting, November 16, 2006, HP Labs Palo Alto, CA.
 70. M. Saif Islam, "Lectures on Molecular Electronics: Challenges in Interfacing Molecules", NATO Nanotechnology Research Forum, October 16-20, 2006, Middle East Tech University, Ankara, Turkey.
 71. M. Saif Islam, "Semiconductor Nanowires for Nanoscale Electronics, Photonics and Sensors: Physics, Technology and Recent Advances", NATO Nanotechnology Research Forum, October 16-20, 2006, Middle East Tech University, Ankara, Turkey.
 72. M. Saif Islam, "Nanotechnology: Revolutionary Opportunities for Electronics, Photonics and Biological Systems", North South University, Dhaka, Bangladesh, Aug 24, 2006.
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95. M. Saif Islam, "Nanowire Integration for Photovoltaics" Banpil Photonics, June 15, 2005.
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101. M. Saif Islam, "Massively Parallel and Manufacturable Nanowire Integration Techniques for Nanoscale Electronics, Photonics and Chem-bio Sensing", Biophotonics Colloquium, UC Davis Biophotonic Center, March 18, 2005.
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104. M. Saif Islam, "Nanotechnology: Prospects and Opportunities", American Association of Bangladeshi Engineers and Architects (AABEA) Annual Meeting, November 20, 2004.
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