Mohamed ElKabbash

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Education

2013-2017	Ph.D. in Physics, Case Western Reserve University (CWRU). Area: Condensed Matter Physics and Optical Physics. Thesis title: Active Plasmonics and Metamaterials.
2010-2012	B.A. in Physics and Economics, Illinois Wesleyan University
2008-2009	Masters, Law and Political Economy. Alexandria University, Egypt.
2003-2007	Bachelors in Law, Alexandria University, Egypt.

Employment

2023- Present	Assistant Professor, **University of Arizona**, Wyant College of Optical Sciences,.
2020- 2023	Postdoctoral researcher, **Massachusetts Institute of Technology**, RLE, Quantum Photonics Laboratory.
2018- 2020	Postdoctoral researcher, **University of Rochester**, The Institute of Optics, High Intensity Femtosecond Laser Lab.
2014- 2017	Research Assistant, **Case Western Reserve University**, Physics Department, The Nanoplasm Lab.
2013- 2014	Teaching Assistant, **Case Western Reserve University**, Physics Department,
2009- 2010	Assistant Faculty member, **Alexandria University**, Faculty of Law, Political economy, Fiscal and Tax laws.
2008- 2009	Junior Faculty member, **Alexandria University**, Faculty of Law, Political economy, Fiscal and Tax laws.
2007-2008	Part Time lecturer of Law, **Arab Academy for Science, Technology & Maritime Transport.**

Service/Outreach. *Limit to period in current rank at the University of Arizona, up to 10 years*

1. **Local/State Outreach**

- Organized and led K–12 outreach activities in Tucson, AZ, including optics and photonics demonstration days at public charter schools, with hands-on experiments in color mixing, camera principles, and optical communication.
- Provided science fair mentoring (grades 3–5) through SARSEF Arizona, introducing students to experimental design and the scientific method.
- Developed and presented photonic computing demonstrations (e.g., edge detection) for K–12 STEM outreach events using optical components such as lenses and spatial filters.

2. **National/International Outreach**

- Led the *Photonics for Africa (PhorAfrica) Initiative* to promote photonic solutions for healthcare, energy access, and communication across African nations; facilitated collaborations with African universities and wrote an article on the role of photonics in addressing critical societal challenges.

3. **College Committees**

- Member, Graduate Admissions Committee, Wyant College of Optical Sciences (Fall 2023, Spring 2024)
- Member, Graduate Curriculum Committee, Wyant College of Optical Sciences (Fall 2024, Spring 2025)

4. **University Committees and Institutional Service**

- Active member, Center for Semiconductor Manufacturing at the University of Arizona, contributing to efforts to secure CHIPS Act funding.
- Represented the University of Arizona at the *Heterogeneous Integration Roadmap (HIR) Conference* and the *Scalable Memory Architecture Program (SMAP) Proposer Day*.

Publications/Creative Activity

I. **Books and Book Chapters**

1. K.V. Sreekanth, M. ElKabbash, V. Caligiuri, R. Singh, A. De Luca, G. Strangi, *New Directions in Thin Film Nanophotonics*, Springer Singapore (2019).

2. Hyperbolic metamaterial-based ultrasensitive plasmonic biosensors for early-stage cancer detection – Book Chapter (2017)

II. **Refereed Journal Articles**

1. Hybrid solar photovoltaic conversion and water desalination via quad-band Fano-resonant optical coatings and superwicking cooling, R Wei, T Xu, M Ma, M ElKabbash, °C Guo, Light: Science & Applications 14 (1), 165 (2025)
2. Maintenance-free ultrahigh energy-and water-efficient evaporative cooling with superwicking, anti-scaling, and antifouling surface, SC Singh, A Vorobyev, M ElKabbash, L Tang, B Regmi, M Madsen, R Wei, Cell Reports Physical Science (2025)
3. Phase change material-based tunable Fano resonant optical coatings and their applications, KV Sreekanth, S Jana, M ElKabbash, R Singh, J Teng, Nanophotonics 13 (12), 2075–2088 (2024)
4. Metal-Optic Nanophotonic Modulators in Standard CMOS Technology, S Trajtenberg-Mills, M ElKabbash, I Harris, S Bandyopadhyay, M Ibrahim, D. Englund (2024)
5. Phase change material-based tunable Fano resonant optical coatings and their applications, KV Sreekanth, S Jana, M ElKabbash, R Singh, J Teng, Nanophotonics (2024)
6. GHz speed 1D light modulation in a scalable resonant Lithium Niobate platform, S Trajtenberg-Mills, M ElKabbash, C Brabec, C Panuski, I Christen, Digital Holography and 3D Imaging HW5C.5 (2023)
7. Fano resonant optical coatings platform for full gamut and high purity structural colors, M ElKabbash, N Hoffman, AR Lininger, SA Jalil, T Letsou, M Hinczewski, °C Guo, Nature Communications 14 (1), 3960 (2023)
8. Zero-Change CMOS Nanophotonics: Converting Foundry Semiconductor Chips to Plasmonic Electro-optic Modulators, M ElKabbash, I Harris, S Trajtenberg-Mills, S Bandyopadhyay, X Chen, CLEO 2023, 1–2 (2023)
9. Lithium Niobate on Silicon High Speed Spatial Light Modulator, S Trajtenberg-Mills, M ElKabbash, C Brabec, C Panuski, I Christen, CLEO Science & Innovations, SF1E.4 (2023)
10. Fast phase retrieval: Unique and stable complex object recovery in o(nlogn) time, C Brabec, ST Mills, M ElKabbash, I Christen, D Englund, CLEO Applications and Technology, AW4I.5 (2023)
11. Epsilon-near-zero (ENZ)-based optomechanics, Y Kiasat, MG Donato, M Hinczewski, M ElKabbash, T Letsou, R Saija, Communications Physics 6 (1), 69 (2023)

12. Gigantic suppression of recombination rate in 3D lead-halide perovskites for enhanced photodetector performance, KJ Lee, R Wei, Y Wang, J Zhang, W Kong, SK Chamoli, T Huang, W Yu, Nature Photonics 17 (3), 236–243 (2023)
13. Fano Resonant Optical coatings platform for Full Gamut and High Purity Structural Colors, C Guo, M ElKabbash, N Hoffman, A Lininger, S Jalil, T Letsou (2022)
14. High-speed electro-optic guided resonance spatial light modulator, M ElKabbash, D Englund, ST Mills, CL Panuski, C Brabec, IR Christen, Active Photonic Platforms 2022, PC1219616 (2022)
15. Angularly selective thermal emitters for deep subfreezing daytime radiative cooling, SK Chamoli, W Li, °C Guo, M ElKabbash, Nanophotonics 11 (16), 3709–3717 (2022)
16. Switchable Gratings for Ultracompact and Ultrahigh Modulation Depth Plasmonic Switches, SK Chamoli, M ElKabbash, °C Guo, Plasmonics 17 (4), 1361–1368 (2022)
17. Imaging nanostructure phase transition through ultrafast far-field optical ultramicroscopy, M ElKabbash, R Fang, A Vorobyev, SA Jalil, S Chamoli, B Lam, S Singh, °C Guo, Cell Reports Physical Science 2 (12) (2021)
18. Controlling Voronoi partitions on femtosecond-laser-superheated metal surfaces, SA Jalil, M ElKabbash, C Cong, R Wei, M Akram, °C Guo, Applied Surface Science 568, 150913 (2021)
19. Reconfigurable metasurface-based 1×2 waveguide switch, A Alquliah, M ElKabbash, J Cheng, G Verma, CS Saraj, W Li, °C Guo,, Photonics Research 9 (10), 2104–2115 (2021)
20. *Fano-resonant ultrathin film optical coatings, M ElKabbash, T Letsou, SA Jalil, N Hoffman, J Zhang, J Rutledge, G Strangi, °C Guo, Nature Nanotechnology 16 (4), 440–446 (2021)
21. Ultrabroadband, compact, polarization independent and efficient metasurface-based power splitter on lithium niobate waveguides, A Alquliah, M ElKabbash, J Zhang, JL Cheng, ° C Guo, Optics Express 29 (6), 8160–8170 (2021)
22. Solar-trackable super-wicking black metal panel for photothermal water sanitation, SC Singh, M ElKabbash, Z Li, X Li, B Regmi, M Madsen, SA Jalil, Z Zhan, °C Guo, Nature Sustainability 3 (11), 938–946 (2020)
23. Multipronged heat-exchanger based on femtosecond laser-nano/microstructured Aluminum for thermoelectric heat scavengers, SA Jalil, M ElKabbash, J Zhang, S Singh, Z Zhan, °C Guo, Nano Energy 75, 104987 (2020)
24. Ultrathin-film optical coating for angle-independent remote hydrogen sensing, M ElKabbash, KV Sreekanth, A Fraiwan, J Cole, Y Alapan, T Letsou, Measurement Science and Technology 31 (11), 115201 (2020)
25. Plasmonic analogue of geometric diodes realizing asymmetric optical transmission, Z Zheng, M ElKabbash, J Zhang, C Guo, Optics Letters 45 (14), 3937–3940 (2020)
26. Thin-film perfect infrared absorbers over single-and dual-band atmospheric windows, J Zhang, R Wei, M ElKabbash, EM Campbell, C Guo, Optics Letters 45 (10), 2800–2803 (2020)
27. Dynamic control of spontaneous emission rate using tunable hyperbolic metamaterials, SK Chamoli, M ElKabbash, J Zhang, C Guo, Optics Letters 45 (7), 1671–1674 (2020)

28. Creating superhydrophobic and antibacterial surfaces on gold by femtosecond laser pulses, SA Jalil, M Akram, JA Bhat, JJ Hayes, SC Singh, M ElKabbash, C Guo, Applied Surface Science 506, 144952 (2020)
29. Spectral absorption control of femtosecond laser-treated metals and application in solar-thermal devices, SA Jalil, B Lai, M ElKabbash, J Zhang, EM Garcell, S Singh, C Guo, Light: Science & Applications 9 (1), 14 (2020)
30. Exciton dynamics in two-dimensional on a hyperbolic metamaterial-based nanophotonic platform, KJ Lee, W Xin, C Fann, X Ma, F Xing, J Liu, J Zhang, M ElKabbash, C Guo, Physical Review B 101 (4), 041405 (2020)
31. Highly floatable superhydrophobic metallic assembly for aquatic applications, Z Zhan, M ElKabbash, JL Cheng, J Zhang, S Singh, C Guo, ACS Applied Materials & Interfaces 11 (51), 48512–48517 (2019)
32. Enhancing thermoelectric output power via radiative cooling with nanoporous alumina, Z Zhan, M ElKabbash, Z Li, X Li, J Zhang, J Rutledge, S Singh, C Guo, Nano Energy 65, 104060 (2019)
33. Broadband infrared plasmonic metamaterial absorber with multipronged absorption mechanisms, CH Fann, J Zhang, M ElKabbash, WR Donaldson, EM Campbell, Optics Express 27 (20), 27917–27926 (2019)
34. Creating Superhydrophobic Polymer Surfaces with Superstrong Resistance to Harsh Cleaning and Mechanical Abrasion Fabricated by Scalable One-Step Thermal-Imprinting, Z Zhan, Z Li, X Li, E Garcell, S Singh, M ElKabbash, C Guo, Advanced Materials Interfaces 6 (16), 1900240 (2019)
35. Hydrogen sensing using thin-film perfect light absorber, M ElKabbash, KV Sreekanth, Y Alapan, M Kim, J Cole, A Fraiwan, ACS Photonics 6 (8), 1889–1894 (2019)
36. Formation of controllable 1D and 2D periodic surface structures on cobalt by femtosecond double pulse laser irradiation, SA Jalil, J Yang, M ElKabbash, C Cong, C Guo, Applied Physics Letters 115 (3), 031602 (2019)
37. *Designer perfect light absorption using ultrathin lossless dielectrics on absorptive substrates, M ElKabbash, S Iram, T Letsou, M Hinczewski, °G Strangi, Advanced Optical Materials 6 (22), 1800672 (2018)
38. *Large-area silver–stibnite nanoporous plasmonic films for label-free biosensing, KV Sreekanth, W Dong, Q Ouyang, S Sreejith, M ElKabbash, CT Lim, ACS Applied Materials & Interfaces 10 (41), 34991–34999 (2018)
39. *Tunable black gold: controlling the near-field coupling of immobilized Au nanoparticles embedded in mesoporous silica capsules, M ElKabbash, A Sousa-Castillo, Q Nguyen, R Mariño-Fernández, °G Strangi, Advanced Optical Materials 5 (21), 1700617 (2017)
40. *Iridescence-free and narrowband perfect light absorption in critically coupled metal high-index dielectric cavities, M ElKabbash, E Ilker, T Letsou, N Hoffman, A Yaney, M Hinczewski, °G Strangi Optics Letters 42 (18), 3598–3601 (2017)
41. *Ultrafast transient optical loss dynamics in exciton–plasmon nano-assemblies, M ElKabbash, AR Rashed, B Kucukoz, Q Nguyen, A Karatay, G Yaglioglu, °G StrangiNanoscale 9 (19), 6558–6566 (2017)

42. *Hyperbolic metamaterials-based plasmonic biosensor for fluid biopsy with single molecule sensitivity, KV Sreekanth, M ElKabbash, Y Alapan, EI Ilker, M Hinczewski, UA Gurkan, °G StrangiEPJ Applied Metamaterials 4 (1) (2017)
43. *Hyperbolic metamaterial-based ultrasensitive plasmonic biosensors for early-stage cancer detection, °G Strangi, KV Sreekanth, M ElKabbash, Next Generation Point-of-Care Biomedical Sensors Technologies for Cancer (2017)
44. *Enhancing the Angular Sensitivity of Plasmonic Sensors Using Hyperbolic Metamaterials, KV Sreekanth, Y Alapan, M ElKabbash, AM Wen, E Ilker, M Hinczewski, °G StrangiAdvanced Optical Materials 4 (11), 1659–1659 (2016)
45. *Extreme sensitivity biosensing platform based on hyperbolic metamaterials, KV Sreekanth, Y Alapan, M ElKabbash, E Ilker, M Hinczewski, UA Gurkan, °G StrangiNature Materials 15 (6), 621–627 (2016)
46. *A multiband perfect absorber based on hyperbolic metamaterials, KV Sreekanth, M ElKabbash, Y Alapan, AR Rashed, UA Gurkan, °G StrangiScientific Reports 6 (1), 26272 (2016)
47. *Plasmon-Exciton Resonant Energy Transfer: Across Scales Hybrid Systems, M ElKabbash, A Rahimi Rashed, KV Sreekanth, A De Luca, M Infusino, ° G Strangi, Journal of Nanomaterials 2016 (1), 4819040 (2016)
48. *Broadband Optical Transparency Via Exciton-Plasmon Coupling In Plexcitonic Nanocomposite Polymer Films, R Dhama, AR Rashed, V Caligiuri, M ElKabbash, °G Strangi, A De Luca, Optics Express 24 (2016)
49. *Optical bistability in Ag-Al_2O_3 one-dimensional photonic crystals, KV Sreekanth, AR Rashed, A Veltri, M ElKabbash, °G Strangi, Europhysics Letters 112 (1), 14005 (2015)
50. *Battling absorptive losses by plasmon–exciton coupling in multimeric nanostructures, AR Rashed, A De Luca, R Dhama, A Hosseinzadeh, M Infusino, M ElKabbash, °G StrangiRSC Advances 5 (66), 53245–53254 (2015)
51. *Plasmon-Exciton Dynamics: Across Scales Approach for Low-Loss Optical Metamaterials, A De Luca, AR Rashed, M ElKabbash, KV Sreekanth, °G Strangi, Journal of Nanomaterials (2015)

III. **ArXiv Preprints**

1. Inverse Drexhage effect in Epsilon-Near-Zero Substrates, SK Chamoli, M ElKabbash, arXiv preprint arXiv:2504.15593 (2025)
2. Probing General Relativity-Induced Decoherence Using an on-chip Sagnac Interferometer, M ElKabbash, arXiv preprint arXiv:2504.11392 (2025)
3. Ultrafast Quantum Optics and Communication, M Sennary, J Rivera-Dean, M ElKabbash, V Pervak, M Lewenstein, arXiv preprint arXiv:2412.08881 (2024)
4. LNoS: Lithium niobate on silicon spatial light modulator, S Trajtenberg-Mills, M ElKabbash, CJ Brabec, CL Panuski, I Christen, °D. Englund, arXiv preprint arXiv:2402.14608 (2024)
5. Metal-optic nanophotonic modulators in standard CMOS technology, M ElKabbash, S Trajtenberg-Mills, I Harris, S Bandyopadhyay, MI Ibrahim, °D. Englund, arXiv preprint arXiv:2310.04409 (2023)

6. Measuring gravitational force from Femto-gram source masses, A Roman, A Hassan, M ElKabbash, arXiv preprint arXiv:2212.06970 (2022)
7. Integrated Metasurface-based Wavelengths Division Demultiplexers, A Alquliah, M ElKabbash, JL Cheng, W Li, °C Guo, arXiv preprint arXiv:2208.03825 (2022)
8. Radiative cooling with angular shields: Mitigating atmospheric radiation and parasitic heating, M ElKabbash, arXiv preprint arXiv:2208.03797 (2022)

Other scholarship:

I. Patents:

1. Optical sensor platform employing hyperbolic metamaterials. US Patent number 10533941, Application number 15684071.
2. Fano resonant optical coating. U.S. Provisional Application No.: 63/165,881.

II. **Patent Disclosures:**

1. CMOS integrated Hyperspectral Imaging with zero change to CMOS foundry processes
2. Using back-end-of-the-line wires in CMOS Process as Metal-Optic Antennas to Enhance Nonlinear processes for imaging applications
3. Efficient Colored Solar Panels and Cells with Integrated Coloration
4. Conic Shield for Enhanced Radiative Cooling of Water Masses for Reduced Water Evaporation and Tackling Global Warming
5. CMOS Integrated Diffusion based Spectrometers with zero change to CMOS foundry processes
6. Polarization optics using effective medium-based optical elements
7. High-Speed Spatial Light Modulators Using Cascading Partial Phase Accumulation
8. High-Speed Modulation Using Photonic Crystals on Digital Micromirror Devices (DMDs)
9. Novel Approach to Minimize Unmodulated Light in Spatial Light Modulation
10. Nanomembranes as a platform for quantum electrodynamics
11. Plasmonic CMOS integrated thermal imaging technique
12. Solar Control surfaces with Angularly Selective Radiative Cooling
13. Radiative cooling with vertical installation
14. Superresolution Imaging via Utilizing Plasmonic Photothermal Redshift Filtering
15. thin film matrix vector multiplication
16. Augmented Reality System for Retinal Image Projection Using Photovoltaic Cells
17. Non-Invasive Biomedical Pressure Measurement Using Ultrasound-Induced Acousto-Optic Modulation
18. Adaptive Wavefront Control System for Simulating Vision Correction
19. High-speed integrated time-reversal ultrasound encoded (TRUE) focus imaging
20. ultrafast stroboscopic electron microscopy
21. colored high efficiency radiative cooling surfaces
22. EUV-Compatible DMD Device Using Existing DMDs with Deposited EUV DBR Mirrors
23. Dense Optical Storage Media with Angular-Selective Thin Film Coatings
24. Continuous Amplitude and Phase Modulation Using Rotary MEMS with Patterned Photonic Crystals and Metasurfaces
25. Fabrication of Metasurfaces in Standard CMOS Foundry Processes
26. Lensless Imaging Using Standard CMOS Foundry Processes
27. CMOS Camera_lensless imaging
28. Monolithically Integrated Plasmonic Biosensors in Standard CMOS Technology for Ultra-sensitive and Multiplexed Bio-Detection
29. High-Density Photonic Memory Through Multi-Layer Phase-Change Materials and Modal Interactions

30. Optical Elements Through Phase Control Using Effective Medium Approach in Thin Films and Membranes
31. Metasurface-Based Spatial Mode Demultiplexer for Enhanced Imaging Resolution
32. Enhanced Photocatalytic Water Purification System Using Ultrathin metal-oxide Films on Reflective Substrates
33. Advanced Radiative Cooling System for CMOS Chips Using Integrated Metal-Optic Layers
34. Schlieren imaging with zero change to CMOS foundry processes
35. schlieren imaging using metasurfaces and thin film optical coatings
36. CMOS integrated diffractive NN
37. Passive Airflow Valve for Wind Load Reduction and Water Protection
38. All optical readout from PICs
39. Apodized Prism Coupler
40. Backside-Patterned nanostructured lens in BSI CMOS Sensors
41. capturing nano- and micro-objects in predesignated sites using suspended membranes
42. CMOS integrated polarization imaging with zero change to foundry processes
43. creation of fresnel zone plates in semiconductor processes and their use for spectral filtering
44. Engineered mirror to increase the radiative cooling capacity of windows
45. fabrication technique to Multilayer nanophotonic devices
46. Fano resonant optical coatings for Multi-Wavelength Fluorescence Microscopy Applications
47. Generalized Likelihood ratio test for imaging through scattering media
48. Graphene Photonic DNA sequencing
49. high speed amplitude-based liquid crystal SLM
50. Integrating Quantum Emitters as On-Chip Light Sources in Photonic Integrated Circuits
51. Metasurface Faraday Isolator
52. Method and System for Reducing Wind Speeds to Mitigate Wildfire Spread
53. Multifunctional solar window bird protection coating
54. Multilayer lithography
55. Multilayer Stacking for High Aspect Ratio Feature nanofabrication
56. Ultrafast Pump-multi Probe Imaging System
57. Optical elements from thin film coatings
58. Polarization-Dependent Dual-Focus Metalens System for Simultaneous Reticle Illumination
59. Programmable Diffractive Photonic Computing Using Pixel-Level Post-Processing for Adaptive Data Classification
60. Radiative Cooling and Air Conditioning System with Enhanced Efficiency and Humidity Resilience
61. Scalable Grayscale Lithography on Any Material
62. Method and Structure for Optical Coupling in Photonic Integrated Circuits Using Etched Silicon Substrates
63. Solar control coatings for Consumer Electronics
64. Suspended Nanomembrane-Based EUV Lithography System with Diffractive Optical Elements and Transmission Masks

65. Time-Varying Photonics and Quantum Light Source Using High Temporal Resolution and Repetition Rate Laser Pulses
66. EUV Photonic Integrated Circuits with Vacuum Guiding
67. Chemical Heat Pipe Using Superwicking Solar Absorbers
68. High-secured ultrafast quantum communication
71. Cryo Compatible Sample Holder for in-situ Microscopy and Sample Characterization (MIT).
72. CMOS Metal Optics for high speed optical modulators (MIT).

Conferences/Scholarly Presentations. *Limit to period in current rank at the University of Arizona, up to 10 years*

1. **Colloquia:** "Fabless Zero-Change CMOS Nanophotonics," presented at the Industrial Affiliates Workshop, Wyant College of Optical Sciences, University of Arizona, 2023.
2. **Colloquia:** "Nanophotonics and Electronics Co-Integration in Standard CMOS Foundries," presented at the Industrial Affiliates Workshop, Wyant College of Optical Sciences, University of Arizona, 2023.
3. **Colloquia:** "From Silicon to Space-Time: Toward Tabletop Experiments for Quantum Gravity," presented at the Wyant College of Optical Sciences, Optical Sciences Colloquium, University of Arizona, 2023.
4. **Conference:** "CMOS Plasmonics and Metamaterials: Demonstration of high speed liquid crystal plasmonic modulators using an electronic CMOS chip", SPIE Optics and Photonics, 2023. (
5. **Conference:** "Measuring Gravity from Nanoscale Objects", SPIE Optics and Photonics, 2023.
6. **Colloquia:** "From Silicon to Space-Time", Arab Physical Society, 2024.
7. **Conference:** "Enhancing Radiative Cooling in Humid Conditions: The Role of Angular Selectivity", CLEO, 2024.
8. **Conference:** "Fano Resonant Thin Film Nanocavities for Hybrid Photovoltaic and Thermal Applications", CLEO, 2024.
9. **Colloquia:** "Introduction to Quantum Nanophotonics", Quantum Bootcamp, the Wyant College of Optical Sciences, 2024
10. **Seminar:** "CMOS and Extreme UV Nanophotonics", Condensed Matter Physics Seminar, Case Western Reserve University, 2024.
11. **Conference:** "Thin film Nanophotonics for Clean Energy Applications", Nanotechnology Convergence for Sustainable Energy, Environment, Climate Change and Health, A US-Africa Conference, 2024.
12. **Conference:** "CMOS Nanophotonics", SPIE Optics and Photonics, 2024. (Invited)
13. **Seminar:** "High speed Spatial Light Modulators for Imaging Through Scatteirng Media", Electric Engineering Seminar, Caltech, 2024.
14. **Seminar:** "Introduction to Quantum Nanophotonics", Winter school, the Wyant College of Optical Sciences, 2024.
15. **Seminar:** "CMOS and Extreme UV Nanophotonics", ECE Seminar, University of Pittsburgh, 2025.

Community Presentations Related to Your Research or Teaching:

1- Scientific Method for K4-K5 students: Presented at the Academy Adventures Midtown charter school.
2- "CMOS Nanophotonics". Industrial Affiliates Week, Spring 2024.
3- "Introduction to Quantum Nanophotonics". Quantum Bootcamp, University of Arizona, 2024.
4- "Introduction to Quantum Nanophotonics". Winter School, University of Arizona, 2024.

Awarded Grants and Contracts: *Limit to period in current rank at the University of Arizona, up to 10 years*

None

Submitted Grants/Contracts. *Limit to period in current rank at the University of Arizona, up to 10 years*

Grant Title	%FTE	Role	Co-PIs	Source	Years of Funding	Indirect Funding	Direct funding	Status
High Speed Time-Reversal Ultrasound Encoded (TRUE) Focusing for Deep Tissue Imaging		Co-PI	Changhuei Yang (PI, Caltech), Lihong Wang (Caltech), Ali Hajimiri (Caltech)	NIH				Pending
Scalable and CMOS-integrated Matrix Vector Multiplication using Thin-film Optical Coating		PI	Guiseppe Strangi (CWRU) Michael Hincewszki (CWRU) Andrew Linnenger (CWRU	NSF				Pending
Coupled Transport and Photonic Properties of Excitons in 2D Semiconductors via Optoelectronic Nanocavities		PI		DOE				Withdrawn
Probing General Relativity-Induced Decoherence Using an On-chip Sagnac Interferometer		PI		AIM Photonics				Rejected
Suppressing Unmodulated Light in SLMs		PI		NSF				Pending

using Omnidirectional and Broadband Perfect Light Absorbers								
Enabling the Integration of Plasmonic and Dielectric Metasurfaces in Existing CMOS Foundry Processes		PI		NSF				Pending
Building Ising Machines with Chemically Synthesized Magnetic Nanoparticles Filtrated through Nanostructured Membranes		PI	Ahmed El-Gendy (UT ElPaso)	NSF				Pending (PM accepted)
– Investigating Phase Errors and Chromatic Aberrations in Effective Medium Flat Optics		PI		NSF				Pending
Humidity-Resilient and Efficient Radiative Cooling for Sustainable Air Conditioning		PI		NSF				Rejected
THz Spontaneous Emission Rates via Deterministic Quantum Emitter–Plasmo		PI		NSF				Rejected

nic Hotspot Coupling								
Enabling the Integration of Metasurfaces into Standard CMOS Foundry Processes		PI		NSF				Rejected