

Juliet T. Gopinath

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EDUCATION	Massachusetts Institute of Technology Ph.D. in Electrical Engineering and Computer Science S.M. in Electrical Engineering and Computer Science	2005 2000
	University of Minnesota B.S. in Electrical Engineering	1998
EMPLOYMENT	University of Colorado Boulder Professor <i>Alfred T. and Betty E. Look Endowed Professor</i> Associate Professor Assistant Professor	2021- 2019 - 2017 - 2021 2009 - 2017
	MIT Lincoln Laboratory, Laser Technology and Applications Technical Staff Member	2005 - 2009
AWARDS AND HONORS	Optica (formerly OSA) Fellow University of Colorado Boulder Provost Achievement Award R&D 100 Award : Wavelength Beam Combining Fiber-Coupled Diode Laser IEEE Senior Member National Science Foundation Graduate Fellowship	2021 2016 2012 2011 1998 - 2001
PROFESSIONAL SERVICE	Service to Journals Associate Editor, Optica IEEE Publications Council IEEE Photonics Society Journal, Associate Editor	2020 - 2018 2011 - 2017
	Service to Funding Agencies Reviewer for grant agencies: NSF, AFOSR, ONR, NIH Reviewer for CINT, Center for Integrated Nanotechnologies Panelist for NSF and NIH	
	Leadership in the Academic Community Secretary Treasurer, APS Division of Laser Science Member-at-large, APS Division of Laser Science	2023 - 2026 2021 - 2023

Photonics Society Rep., IEEE Nanotechnology Council	2020 – 2021
Division of Laser Science/APS Nominating Committee	2019
OSA Charles Hard Townes Award Committee	2019 - 2021
Chair & committee member	

Conference Organization

Optica Biophotonics Conference, Subcomm. Member	2022 - 2023
Advanced Solid State Lasers (ASSL), Subcomm. Member	2022
Hilton Head Workshop 2022/2024, Subcommittee Member	2021 - 2024
Ultrafast Optics Conf. 2023, Subcommittee Member	2022 - 2023
International Semiconductor Laser Conf., Subcomm Mem.	2022, 2023, 2024
Advanced Photonics Congress 2022, Subcomm. Member	2021 - 2022
Frontiers in Optics 2021, Subcommittee Member	2021
General Co-Chair for the Joint Symposium on Optics (OSA/OSK/OSJ)	2021
OSA/OSK/OSJ Symposium Committee	2019
CLEO 2023, 2024, Subcommittee Chair	2022-2024
CLEO 2023, 2024 Diversity Task Force	2022 - 2024
CLEO 2014-16, 2019-22, Subcommittee Member	2014-16/19 - 22
CLEO Steering Committee APS DLS Representative	2021-ongoing
Ultrafast Optics, Program Committee	2017
Colorado Photonics Industry Association Annual Meeting, Program Chair	2014 - 2017
OECC/ACOFT 2014, Program Committee,	2013 - 2014
OSA Optical Sensors Topical Meeting, Program Comm.	2012

University Service

CUbit, Associate Director	2019
Quantum Interdisciplinary Research Theme, Director	2018 - 2019

ONLINE TEACHING

<u>Active Optical Devices Specialization</u>	2020 - ongoing
Coursera MOOC	
<i>Online course on semiconductor light sources, detectors & displays</i>	

OUTREACH

CU Boulder Women in ECEE, founder and faculty advisor	2011- ongoing
<i>Student group for women in electrical engineering</i>	
Fifth graders day at CU Boulder	2023
<i>Organized full day field trip for 50 5th graders to CU Boulder</i>	
Science Discovery Summer Electromagnetics Course	2011- 2022
<i>EM course for under-represented high school students</i>	
Chair, CU ECEE Diversity, Equity and Inclusion (DEI)	2020 - 2022
<i>Committee for DEI in ECEE department</i>	
MIT EECS Rising Stars Workshop, panelist	2021
<i>Two-day career workshop for diverse postdocs</i>	
APS Conf. for Undergrad. Women in Physics (CUWiP)	2017
<i>Workshop for undergraduate women in physics: panelist & speaker</i>	

1. S. A. Pierce, J. Jacobellibi, K. S. Given, W. B. Macklin, **J. T. Gopinath**, M. E. Siemens, D. Restrepo, and E. A. Gibson, "OpenSTED: Open-Source DyMIN 1 system for STED Microscopy," *Submitted to Journal of Neuroscience, special section on Open Source Tools and Techniques* (2023).
2. S. D. Gilinsky, D. N. Jung, G. L. Futia, M. Zohrabi, T. A. Welton, O. D. Supekar, E. A. Gibson, D. Restrepo, V. M. Bright, and **J. T. Gopinath**, "Tunable liquid lens for three-photon excitation microscopy" *Submitted to Biomedical Optics Express* (2023).
3. D. J. Park, O. D. Supekar, V. M. Bright, A. R. Greenberg, and **J. T. Gopinath**, "Raman spectroscopy for real-time concurrent detection of multiple scalants on RO membranes," *Desalination* **565**, 116851 (2023).
4. S. D. Gilinsky, M. Zohrabi, O. D. Supekar, W. Y. Lim, V. M. Bright, and **J. T. Gopinath**, "Two-dimensional individually addressable electrowetting lens array" *Optics Express* **31**, 30550-30561 (2023).
5. G. Krueper, L. Cohen and **J. T. Gopinath**, "New Cascaded Architecture for Classical and Quantum Multiparameter Sensing", arXiv:2304.08545 [quant-ph], <https://doi.org/10.48550/arXiv.2304.08545>, *To be submitted to PRX Quantum* (2024).
6. V. Kumar, K. Behrman, F. Speed, C. A. Saladrigas, O. D. Supekar, Z. Huang, V. M. Bright, C. G. Welle, D. Restrepo, **J. T. Gopinath**, E. A. Gibson, and I. A. Kymissis, "A microLED light source for optical sectioning structured illumination microscopy," *Optics Express* **31**, 16709-16718 (2023) (2023).
7. E. J. Miscles, W. Y. Lim, O. D. Supekar, M. Zohrabi, **J. T. Gopinath** and V. M. Bright, "Axisymmetrical resonance modes in an electrowetting optical lens," *Applied Physics Letters* **122**, 201106 (2023).
8. M. Zohrabi, W. Y. Lim, S. Gilinsky, V. M. Bright and **J. T. Gopinath**, "Adaptive aberration correction using an electrowetting array," *Applied Physics Letters* **122**, 081102 <https://doi.org/10.1063/5.0133473> (2023).
9. M. Grayson, G. Krueper, B. Xu, M. Zohrabi, D. Hjelm, J. T. Gopinath, and W. Park, "On-chip mid-infrared optical sensing with GeSbSe waveguides and resonators," *Opt. Express* **31**, 877-889 (2023)
10. T. Shanavas, M. Grayson, B. Xu, M. Zohrabi, W. Park, and J. T. Gopinath, "Cascaded forward Brillouin lasing in a chalcogenide whispering gallery mode microresonator," *APL Photonics* **116108** (2022) <https://doi.org/10.1063/5.0112847>.
11. D. J. Park, O. D. Supekar, A. Greenberg, **J. T. Gopinath** and V. M. Bright, "In-situ monitoring of calcium carbonate scale progression on reverse osmosis membranes using Raman spectroscopy," *Desalination and Water Treatment* **273**, 92–103 (2022).
12. M. Grayson, B. Xu, T. Shanavas, M. Zohrabi, K. Bae, **J. T. Gopinath** and W. Park, "Fabrication and Characterization of High Quality GeSbSe Reflowed and Etched Ring Resonators," *Optics Express* **30**, 31107 - 31121 (2022).
13. A. Q. Anderson, E. F. Strong, S. C. Coburn, G. B. Rieker, and **J. T. Gopinath**, "Orbital Angular Momentum-Based Dual-Comb Interferometer for Ranging and Rotation Sensing," *Optics Express* **30**, 21195-21210 (2022).
14. O.D. Supekar, A. Sias, S.R. Hansen, G. Martinez, G.C. Peet, X. Peng, V.M. Bright, E.G. Hughes, D. Restrepo, D.P. Shepherd, C.G. Welle, **J.T. Gopinath**, and E.A. Gibson, "Miniature Structured Illumination Microscope for in vivo 3D Imaging of Brain Structures with Optical Sectioning", *Biomedical Optics Express* **13**, 2530-2541 (2022).
15. G. Krueper, C. Yu, S. B. Libby, R. Mellors, L. Cohen, and **J. T. Gopinath**, "Realistic Model of Entanglement-Enhanced Sensing in Optical Fiber," *Optics Express* **30**, 8652-8666 (2022).

16. B. Heffernan, P. Riley, O. Supekar, S. Meyer, D. Restrepo, M. Siemens, E. A. Gibson, and **J. T. Gopinath**, "Two-photon fiber-coupled super-resolution microscope for biological imaging," *APL Photonics* **7**, 036102 (2022), DOI: 10.1063/5.0075012.
17. W. Y. Lim, M. Zohrabi, J. Zhu, T. Socco, T. Carmon, **J. T. Gopinath** and V. M. Bright, "Spectrally tunable liquid resonator based on electrowetting," *Optics Express* **30**, 18949-18965 (2022).
18. Y. L. Simmons, K. J. Underwood, O. D. Supekar, B. M. Heffernan, T. A. Welton, E. A. Gibson, and **J. T. Gopinath**, "Femtosecond diode-based time lens laser for multiphoton microscopy," *Biomed. Opt. Express* **12**, 6269-6276 (2021)
19. B. Xu, B. M. Heffernan, K. Bae, M. Siemens, **J. T. Gopinath** and W. Park, "Selective excitation of plasmon resonances with cylindrical vector beams," *Optics Express* **29**, 13071 (2021).
20. E. F. Strong, A. Q. Anderson, M. P. Brenner, B. M. Heffernan, N. Hoghooghi, **J. T. Gopinath** and G. B. Rieker, "Angular velocimetry for fluid flows: an optical sensor using structured light and machine learning," *Optics Express* **29**, 9960 (2021).
21. A. Q. Anderson, E. F. Strong, B. M. Heffernan, M. E. Siemens, G. B. Rieker and **J. T. Gopinath**, "Observation of the Rotational Doppler Shift in Spatially Incoherent Light," *Optics Express* **29**, 4058-4066 (2021).
22. J. Zhu, T. M. Horning, M. Zohrabi, W. Park and **J. T. Gopinath**, "Photo-induced writing and erasing of gratings in As₂S₃ chalcogenide microresonators," *Optica* **7**, 1645-1648 (2020).
23. D. Park, O. D. Supekar, A. R. Greenberg, **J. T. Gopinath** and V. M. Bright, "Real-time monitoring of calcium sulfate scale removal from RO desalination membranes using Raman spectroscopy," *Optics Express* **29**, 114736 (2021).
24. K. Bae, J. Zhu, C. Wolenski, A. Das, T. M. Horning, S. Pampel, M. Grayson, M. Zohrabi, **J. T. Gopinath** and W. Park, "Indium Tin Oxide Nanoparticle-Coated Silica Microsphere with Large Optical Nonlinearity and High Quality Factor," *ACS Photonics*, <https://pubs.acs.org/doi/10.1021/acsp Photonics.0c01079> (2020).
25. E. L. Strong, A. Anderson, **J. T. Gopinath** and G. Rieker, "Centering a beam of light to the axis of rotation of a planar object", *Review of Scientific Instruments* **91**, 105101 (2020).
26. S. Pampel, K. Bae, M. Zohrabi, M. Grayson, T. M. Horning, W. Park and **J. T. Gopinath**, "Third-Harmonic Generation Enhancement in an ITO Nanoparticle-Coated Microresonator," *Optics Express* **28**, 30004 (2020).
27. K. J. Underwood, A. F. Briggs, S. D. Sifferman, V. B. Verma, N. Sirica, R. P. Prasankumar, S. -W. Nam, K. L. Silverman, S. R. Bank and **J. T. Gopinath**, "Strain dependence of Auger recombination in 3 mm GaInAsSb/GaSb type-I active regions," *Applied Physics Letters* **116**, 262103 (2020).
28. A. Q. Anderson, E. F. Strong, B. M. Heffernan, M. E. Siemens, G. B. Rieker, and **J. T. Gopinath**, "Detection Technique Effect on Rotational Doppler Measurements," *Optics Letters* **45**, 2636-2639 (2020).
29. M. Zohrabi, W. Y. Lim, V. M. Bright and **J. T. Gopinath**, "High extinction ratio, low insertion loss, optical switch based on an electrowetting prism," *Optics Express* **28**, 5991-6001 (2020).
30. W. Y. Lim, M. Zohrabi, **J. T. Gopinath**, and V. M. Bright, "Calibration and characteristics of an electrowetting laser scanner," *IEEE Sensors* **20**, 3496-3503 (2020).
31. O. D. Supekar, D. J. Park, A. R. Greenberg, **J. T. Gopinath**, and V. M. Bright, "Real-Time Detection of Early-Stage Calcium Sulfate and Calcium Carbonate Scaling Using Raman Spectroscopy," *Journal of Membrane Science* **596**, 117603 1-9 (2020).
32. M. Grayson, M. Zohrabi, K. Bae, J. Zhu, **J. T. Gopinath** and W. Park, "Enhancement of third-order nonlinearity of thermally evaporated GeSbSe waveguides through annealing," *Optics Express* **27**, 33606-33620 (2019).
33. J. Chiles, N. Nader, E. J. Stanton, D. Herman, G. Moody, J. Zhu, C. Skehan, B. Guha, A. Kowligy, **J. T. Gopinath**, K. Srinivasan, S. A. Diddams, I. Coddington, N. R. Newbury, J. M.

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34. B. M. Heffernan, S. A. Meyer, D. Restrepo, M. E. Siemens, E. A. Gibson and **J. T. Gopinath**, "A fiber-coupled stimulated emission depletion microscope for bend-insensitive through-fiber imaging," *Scientific Reports* **9**, 11137 (2019).
 35. J. Zhu, M. Zohrabi, K. Bae, T. M. Horning, M. B. Grayson, W. Park, and **J. T. Gopinath**, "Nonlinear characterization of silica and chalcogenide microresonators," *Optica* **6**, 716-722 (2019).
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 39. O. D. Supekar, J. Brown, A. R. Greenberg, **J. T. Gopinath** and V. M. Bright, "Real-time detection of reverse-osmosis membrane scaling via Raman spectroscopy," *Industrial and Engineering Chemistry Research*, DOI: 10.1021/acs.iecr.8b01272 (2018)
 40. B. N. Ozbay, G. L. Futia, M. Ma, V. M. Bright, **J. T. Gopinath**, E. G. Hughes, D. Restrepo, and E. A. Gibson, "Three dimensional two-photon imaging of neural activity in freely moving mice using a miniature fiber coupled microscope with dynamic focusing," *Scientific Reports* **8**, 8108, DOI: 10.1038/s41598-018-26326-3 (2018).
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 42. M. Zohrabi, R. H. Cormack, C. McCullough, O. D. Supekar, E. A. Gibson, V. M. Bright and **J. T. Gopinath**, "Wavefront aberration correction using multielectrode electrowetting-based devices," *Optics Express* **25** 31451-31461 (2017).
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 46. R. D. Niederriter, B. N. Ozbay, G. L. Futia, E. A. Gibson, and **J. T. Gopinath**, "Compact diode-laser-based pulse source for multiphoton biological imaging," *Biomedical Optics Express* **8**, 315-322 (2016).
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51. M. Zohrabi, R. H. Cormack and **J. T. Gopinath**, "Wide-angle non-mechanical beam steering using liquid lenses," *Optics Express* **24**, 23798 (2016).
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57. B. N. Ozbay, J. T. Losacco, R. Cormack, R. Weir, V. M. Bright, **J. T. Gopinath**, D. Restrepo, and E. A. Gibson, "Miniaturized fiber-coupled confocal microscope with a continuously moving focus using no moving parts," *Opt. Lett.* **40**, 2553-2556 (2015). *Also appears in Virtual Journal for Biomedical Optics (2015)*.
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62. **J. T. Gopinath**, V. M. Bright, C. C. Cogswell, R. D. Niederriter, A. Watson, R. Zahreddine, and R. H. Cormack, "Simulation of electrowetting lens and prism arrays for wavefront compensation," *Appl. Opt.* **51**, 6618 (2012).
63. P. W. Juodawlakis, J. J. Plant, W. Loh, L. Missaggia, F. O'Donnell, D. C. Oakley, A. Napoleone, J. Klamkin, **J. T. Gopinath**, D. J. Ripin, S. Gee, P. J. Delfyett, and J. P. Donnelly, "High-Power, Low-Noise 1.5- μ m Slab-Coupled Optical Waveguide (SCOW) Emitters: Physics, Devices, and Applications," *IEEE J. of Sel. Top. in Quant. Electron.* **17**, 1698-1714 (2011).
64. K-H Hong, **J. T. Gopinath**, D. Rand, A. M. Siddiqui, S-W Huang, E Li, B. J. Eggleton, J. D. Hybl, T. Y. Fan, and F. X. Kaertner, "High-energy, kHz-repetition-rate, ps cryogenic Yb:YAG chirped-pulse amplifier," *Optics Letters* **35**, 1752-1754 (2010).
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CONFERENCE PRESENTATIONS

1. **J. T. Gopinath**, "Nonlinear chalcogenide microresonator devices," *Invited presentation, Photonics West*, paper 12871-1 (2024).
2. F. Speed, C. A. Saladrigas, S. Vieau, V. Kumar, A. Teel, V. M. Bright, D. Restrepo, I. Kymissis, **J. T. Gopinath**, C. G. Welle, and E. A. Gibson, "Calcium Recording in Hippocampal CA1 Pyramidal Neurons with Enhanced Contrast Using OS-SIM," *Accepted for presentation at the Optica Biophotonics Congress* (2024).
3. F. Speed, V. Kumar, C. Saladrigas, S. Vieau, I. Kymissis, **J. Gopinath**, V. Bright, C. Welle, D. Restrepo, E. Gibson. Illumination methods for voltage imaging with a microLED light source. Program No. PSTR574.22. *2023 Neuroscience Meeting Planner*. Washington, D.C.: Society for Neuroscience (2023).
4. K. Wootten, M. Zohrabi, M. E. Siemens, and **J. T. Gopinath**, "Temperature and strain fiber sensing using orbital angular momentum," *Presented at the IEEE Photonics Society Annual Meeting* (2023).
5. S. D. Gilinsky, D. N. Jung, G. L. Futia, M. Zohrabi, T. A. Welton, E. A. Gibson, D. Restrepo, V. M. Bright, and **J. T. Gopinath**, "Electrowetting lens for focus-tunable three-photon excitation microscopy," *Presented at the IEEE Photonics Society Annual Meeting* (2023).
6. R. Oroke, E. J. Miscles, S. D. Gilinsky, M. Zohrabi, **J. T. Gopinath**, and V. M. Bright, "Machined Aluminum Electrowetting Lens," *Presented at the IEEE Photonics Society Annual Meeting* (2023).
7. E. J. Miscles, M. Zohrabi, **J. T. Gopinath**, and V. M. Bright, "Enhancing Imaging Performance in Electrowetting Prism Scanners through Electrode Gap Reduction," *Presented at the IEEE Photonics Society Annual Meeting* (2023).
8. **J. T. Gopinath**, Shedding light on the brain: Super-resolution and multiphoton microscopy, *Invited Presentation, NanoNeuro* (2023).
9. **J. T. Gopinath**, "Photonic devices based on chalcogenides," *Invited presentation, Photonics North* (2023).
10. B. Xu, M. Grayson, T. Shanavas, **J. T. Gopinath**, and W. Park, "Dispersion control of high-quality Ge₂₃Sb₇S₇₀ reflowed wedge resonators," *Presented at the Conference on Lasers and Electro-Optics* (2023).
11. G. M. Brodnik, H. Lu, J. Erikson, D. R. Carlson, **J. T. Gopinath**, J. A. Black, and S. B. Papp, "Robust wavelength control of microresonator parametric oscillation with nanophotonic bandgaps," *Presented at the Conference on Lasers and Electro-Optics* (2023).
12. G. Krueper, L. Cohen, R. Mellors, S. B. Libby, M. Messerly, J. Combes, and **J. T. Gopinath**, "Quantum Multiparameter Estimation Model of Cascaded Phases in Optical Fiber," *Presented at the Conference on Lasers and Electro-Optics* (2023).
13. T. Shanavas, R. McLeod, M. E. Siemens, and J. T. Gopinath, "Comparison of coherent and incoherent donut beams for deep tissue STED microscopy," *Presented at the Conference on Lasers and Electro-Optics* (2023).

14. D. J. Park, O.D. Supekar, A. R. Greenberg, **J. T. Gopinath**, and V. M. Bright, “Raman Chemical Fingerprints for Real-time Detection of Membrane Fouling,” *Presented at the 31st Annual Meeting of the North American Membrane Society (NAMS)* (2022).
15. G. Krueper, L. Cohen, J. Combes, S. B. Libby, R. Mellors, M. Messerly, and **J. T. Gopinath**, “Modeling of Cascaded Phase Sensing in Optical Fiber Using Squeezed Light,” *Presented at APS March Meeting* (2023).
16. **J. T. Gopinath**, B. Heffernan, S. A. Meyer, D. Restrepo, M. E. Siemens, and E. A. Gibson, “A window into the brain: Advances in super-resolution microscopy,” *Invited presentation, Conference on Optics Photonics and Quantum Optics 2022* (2022).
17. S. D. Gilinsky, M. Zohrabi, O. D. Supekar, W. Y. Lim, V. M. Bright, and **J. T. Gopinath**, “Two-Dimensional Individual Addressable Electrowetting Micro-Lens Array,” *Presented at the IEEE Photonics Society Annual Meeting* (2022).
18. E. J. Miscles, W. Y. Lim, O. D. Supekar, M. Zohrabi, **J. T. Gopinath** and V. M. Bright, “Vibration suppression in an electrowetting lens,” *Presented at the IEEE Photonics Society Annual Meeting* (2022).
19. **J. T. Gopinath**, “From water filtration to autonomous navigation: Using photonics to enable new sensing modalities”, *Plenary, Optical Sensors and Sensing Congress* (2022).
20. M. Grayson, G. Krueper, B. Xu, D. Hjelme, **J. T. Gopinath** and W. Park, “GeSbSe Devices for Mid-Infrared Optical Sensing,” *Presented at Optical Sensors and Sensing Congress 2022 SM4E.2* (2022).
21. O. Supekar, A. Sias, S. Hansen, G. Martinez, G. Peet, X. Peng, V. Bright, E. Hughes, D. Shepherd, C. Welle, **J. Gopinath** and E. Gibson, “SIMscope3D: A structured illumination miniature microscope for high resolution brain imaging,” *Presented at the 2022 Biophotonics Congress: Biomedical Optics* (2022).
22. O. D. Supekar, Y. Lange Simmons, V. M. Bright, and **J. T. Gopinath**, “Narrow linewidth picosecond source at 760 nm generating 50 nJ pulses using four-wave mixing,” *Presented at the 2022 Conference on Lasers and Electro-Optics (CLEO)* (2022).
23. T. Shanavas, M. B. Grayson, M. Zohrabi, W. Park, and **J. T. Gopinath**, “Cascaded Forward Brillouin Scattering in a Chalcogenide Microsphere,” *Presented at the 2022 Conference on Lasers and Electro-Optics (CLEO)* (2022).
24. A. Q. Anderson, E. F. Strong, S. C. Coburn, G. Rieker, and **J. T. Gopinath**, “Dual Comb Ranging and Rotation Sensing with Orbital Angular Momentum,” *Presented at the 2022 Conference on Lasers and Electro-Optics (CLEO)* (2022).
25. E. F. Strong, S. C. Coburn, A. Q. Anderson, R. Cole, **J. T. Gopinath**, S. Becker, and G. Rieker, “Broadband hyperspectral spectroscopy imaging using dual frequency comb spectroscopy and compressive sensing,” *Presented at the 2022 Conference on Lasers and Electro-Optics (CLEO)* (2022).
26. Y. Wang, B. M. Heffernan, M. Zohrabi, J. Farrell, M. E. Siemens, and **J. T. Gopinath**, “Fiber sensing using higher-order spatial modes and the orbital angular momentum of light,” *Presented at the 2022 Conference on Lasers and Electro-Optics (CLEO)* (2022).
27. E. F. Strong, A. Q. Anderson, B. M. Heffernan, M. P. Brenner, N. Hoghooghi, **J. T. Gopinath** and G. B. Rieker, “Sensing angular velocity with optical orbital angular momentum and machine learning,” *Presented at OSA Imaging and Applied Optics Congress* (2021).
28. S. A. Meyer, M. E. Siemens, **J. T. Gopinath**, D. Restrepo, and E. A. Gibson, “OpenSTED: Inexpensive and open-source implementation of Dynamic Intensity Minimum (DyMIN) for Stimulated Emission Depletion (STED) microscopy,” *Presented at the OSA Biophotonics Congress* (2021).
29. G. R. Krueper, R. Mellors, C. Yu, S. B. Libby, M. Messerly, and **J. T. Gopinath**, “Entangled-enhanced interferometry in optical fiber,” *Presented at the Conference on Lasers and Electro-Optics* (2021).
30. B. M. Heffernan, P. Riley, O. D. Supekar, S. A. Meyer, N. M. George, D. Restrepo, M. E. Siemens, E. A. Gibson, and **J. T. Gopinath**, “Two-photon fiber STED microscopy using

- polarization maintaining fiber,” *Presented at the Conference on Lasers and Electro-Optics (2021)*.
31. A. Q. Anderson, E. F. Strong, B. M. Heffernan, M. E. Siemens, G. B. Rieker, and **J. T. Gopinath**, “Rotation measurement using spatially incoherent light and the rotational Doppler shift,” *Presented at the Conference on Lasers and Electro-Optics (2021)*.
 32. B. M. Heffernan, B. Xu, K. Bae, M. E. Siemens, W. Park and **J. T. Gopinath**, “Tailoring the multipole content at tight focus using cylindrical vector beams with orbital angular momentum,” *Presented at the Conference on Lasers and Electro-Optics (2021)*.
 33. B. Xu, B. M. Heffernan, K. Bae, M. Siemens, **J. T. Gopinath** and W. Park, “Group theory guided symmetry coupling between cylindrical vector beams and localized surface plasmon resonances,” *Presented at the Conference on Lasers and Electro-Optics (2021)*.
 34. W. Y. Lim, M. Zohrabi, J. Zhu, **J. T. Gopinath** and V. M. Bright, “Electrowetting-based tunable liquid droplet microresonator,” *Presented at the IEEE MEMS Conference (2021)*.
 35. D. Park, O. Supekar, A. Greenberg, **J. T. Gopinath** and V. M. Bright, “Novel Sensors for Real-time Detection of Membrane Fouling in RO Desalination Systems,” *Presented at the AGU Fall Meeting (2020)*.
 36. **J. T. Gopinath**, “Nonlinear chalcogenide photonic devices,” *Invited presentation at the IEEE Photonics Society Conference (2020)*.
 37. S. Pampel, T. M. Horning, K. Bae, M. Zohrabi, M. Grayson, W. Park and **J. T. Gopinath**, “Enhanced Nonlinearity in a Functionalized Whispering Gallery Mode Microcavity,” *Presented at the Frontiers in Optics Conference (2020)*.
 38. **J. T. Gopinath**, “Fiber-Coupled Stimulated Emission Depletion Microscopy (STED),” *Invited presentation at OSA Imaging and Sensing Congress (2020)*.
 39. A. F. Briggs, S. D. Sifferman, K. J. Underwood, L. J. Nordin, **J. T. Gopinath** and S. R. Bank, “Auger Recombination in Strained GaInAsSb Quantum Well Membranes,” *Presented at EMC (2020)*.
 40. G. Martinez Sanchez, O. D. Supekar, G. L. Futia, B. N. Ozbay, C. Welle, V. M. Bright, **J. T. Gopinath**, D. Restrepo, D. Shepherd, and E. A. Gibson, “Widefield fluorescence optical sectioning microscopy in a miniature fiber-coupled microscope with active axial scanning” *Presented at Conference on Lasers and Electro-Optics (2020)*.
 41. A. Q. Anderson, E. F. Strong, B. M. Heffernan, M. E. Siemens, G. B. Rieker, and **J. T. Gopinath**, “Detection strategies for measuring rotation with the rotational Doppler effect” *Presented at Conference on Lasers and Electro-Optics (2020)*.
 42. E. F. Strong, A. Q. Anderson, B. M. Heffernan, M. P. Brenner, **J. T. Gopinath**, and G. B. Rieker, “An angular velocity sensor using machine learning and optical orbital angular momentum” *Presented at Conference on Lasers and Electro-Optics (2020)*.
 43. K. Bae, T. M. Horning, S. Pampel, M. Zohrabi, M. B. Grayson, **J. T. Gopinath**, and W. Park, “On-chip high-quality Ge₂₃Sb₇S₇₀ round-wedge resonators for broadband dispersion engineering,” *Presented at Conference on Lasers and Electro-Optics (2020)*.
 44. K. J. Underwood, A. F. Briggs, S. D. Sifferman, V. Verma, N. Sirica, R. Prasankumar, S. W. Nam, K. L. Silverman, S. Bank, and **J. T. Gopinath**, “Auger Recombination in Strained Mid-Infrared Quantum Wells,” *Presented at Conference on Lasers and Electro-Optics (2020)*.
 45. Y. L. Simmons, K. J. Underwood, B. M. Heffernan, O. Supekar, E. A. Gibson, and **J. T. Gopinath**, “Near-infrared Femtosecond Time Lens Diode Laser with kW Peak Powers for Two-Photon Microscopy,” *Presented at Conference on Lasers and Electro-Optics (2020)*.
 46. M. Grayson, M. Zohrabi, K. Bae, J. Zhu, **J. T. Gopinath**, and W. Park, “Enhancement of third-order nonlinearity of thermally evaporated GeSbSe waveguides through annealing,” *Presented at SPIE Photonics West, Proceedings Volume 11283, Integrated Optics: Devices, Materials, and Technologies XXIV; 1128319 (2020)*
 47. J. Zhu, K. Bae, M. Zohrabi, T. M. Horning, M. B. Grayson, W. Park, and **J. T. Gopinath**, “In situ, nonlinear characterization of microresonators,” *Presented at the Conference on*

- Nonlinear Optics, Postdeadline* (2019).
48. K. Bae, J. Zhu, M. B. Grayson, M. Zohrabi, C. Wolenski, T. M. Horning, **J. T. Gopinath** and W. Park, "High-quality factor, nonlinear indium tin oxide nanoparticle-coated silica microsphere," *Presented at the Conference on Nonlinear Optics* (2019).
 49. J. Zhu, M. Zohrabi, T. M. Horning, W. Park, and **J. T. Gopinath**, "Photosensitive Writing and Erasing of Gratings in an As₂S₃ Chalcogenide Microresonator," *Presented at the Conference on Nonlinear Optics* (2019).
 50. **J. T. Gopinath**, M. Zohrabi, O. D. Supekar, W. Y. Lim, B. N. Ozbay, G. L. Futia, D. Restrepo, E. A. Gibson, and V. M. Bright, "Electrowetting adaptive optical devices for LIDAR," *Invited presentation, Applied Industrial Optics* (2019).
 51. A. F. Briggs, S. D. Sifferman, K. J. Underwood, L. J. Nordin, **J. T. Gopinath** and S. R. Bank, "Externally applied strain on GaSb-based GaInAsSb quantum well membranes," *Presented at EMC* (2019).
 52. **J. T. Gopinath**, B. M. Heffernan, S. A. Meyer, D. Restrepo, M. E. Siemens, and E. A. Gibson, "Imaging of HeLa cells with fiber stimulated emission depletion microscopy (STED)," *Presented at the International Conference on Orbital Angular Momentum (ICOAM)* (2019).
 53. B. M. Heffernan, S. A. Meyer, D. Restrepo, M. E. Siemens, E. A. Gibson, and **J. T. Gopinath**, "Bend-insensitive, through-fiber stimulated emission depletion (STED) imaging of HeLa cells," *Presented at the Conference on Lasers and Electro-Optics (CLEO)* (2019).
 54. S. D. Sifferman, M. Motyka, A. F. Brights, K. J. Underwood, K. M. McNichoas, R. Kudrawiec, **J. T. Gopinath** and S. R. Bank, "Dilute-Bismide Alloys for GaSb-based Mid-Infrared Semiconductor Lasers" *Presented at the Conference on Lasers and Electro-Optics (CLEO)*, 2018.
 55. O. D. Supekar, B. N. Ozbay, M. Zohrabi, P. D. Nystrom, G. L. Futia, D. Restrepo, E. A. Gibson, **J. T. Gopinath**, and V. M. Bright, "Electrowetting prism for scanning in two-photon microscopy," *Presented at the Conference on Lasers and Electro-Optics (CLEO)*, 2018.
 56. O. D. Supekar, J. J. Brown, A. R. Greenberg, **J. T. Gopinath**, and V. M. Bright, "Real-time detection of scaling on reverse osmosis membranes with Raman spectroscopy," *Presented at Conference on Lasers and Electro-Optics (CLEO)*, 2018.
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 59. S. Alperin, B. Heffernan, R. D. Niederriter, M. E. Siemens, and **J. T. Gopinath**, "Generation and detection of tunable orbital angular momentum in optical fiber," Presented at *ICOAM (International Conference on Orbital Angular Momentum)*, Capri, Italy (2017).
 60. **J. T. Gopinath**, "Nonlinear chalcogenide materials and devices," *Invited presentation at Progress in Electromagnetic Research Symposium (PIERS)* (2017).
 61. M. Zohrabi, R. H. Cormack, and **J. T. Gopinath**, "Nonmechanical beam steering using tunable lenses," *Presented at Conference on Lasers and Electro-Optics*, SW4L.2 (2017).
 62. O. D. Supekar, M. Zohrabi, J. J. Brown, **J. T. Gopinath** and V. M. Bright, "Enhancing the response time of electrowetting lenses using voltage shaping," *Presented at Conference on Lasers and Electro-Optics*, SM4C.7 (2017).
 63. B. M. Heffernan, R. D. Niederriter, M. E. Siemens, and **J. T. Gopinath**, "Generation of higher-order orbital angular momentum in polarization-maintaining fiber," *Presented at Conference on Lasers and Electro-Optics*, STu4K.3 (2017).
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 66. S. N. Alperin, R. D. Niederriter, **J. T. Gopinath**, and M. E. Siemens, "Quantitative measurement of the average orbital angular momentum of light with a cylindrical lens," *Presented at Frontiers in Optics JW4A.87* (2016).
 67. R. D. Niederriter, B. N. Ozbay, G. L. Futia, D. Restrepo, E. A. Gibson, and **J. T. Gopinath**, "Miniature picosecond diode laser system for two-photon fluorescence imaging of the mouse brain," *Presented at the Society for Neuroscience Meeting (SFN) Poster 365.04/MMM37* (2016).
 68. K. Underwood, R. D. Montoya, S. Terrab, A. M. Watson, V. M. Bright and **J. T. Gopinath**, "Large Extinction Ratio Electrowetting Optical Shutter", *Conference on Lasers and Electro-Optics (CLEO)*, JW2A.144 (2016).
 69. K. Underwood and **J. T. Gopinath**, "Intracavity Martinez Compressor for Simultaneous Dispersion Compensation and Tunable Spectral Filtering," *Conference on Lasers and Electro- Optics (CLEO)*, STu3.P.2 (2016).
 70. M. R. Krogstad, S. Ahn, W. Park, and **J. T. Gopinath**, "Linear and Nonlinear Properties of Ge-Sb-Se Waveguides at Telecom Wavelengths," *Conference on Lasers and Electro-Optics (CLEO)*, SF.1P.2 (2016).
 71. S. Terrab, A. M. Watson, K. M. Dease, **J. T. Gopinath** and V. M. Bright, "Electrowetting-Based Variable Tuning Prism," *Presented at 2015 Conference on Lasers and Electro-Optics (CLEO)*, AW4K.4 (2015).
 72. M. R. Krogstad, S. Ahn, W. Park, and **J. T. Gopinath**, "Characterization of Ge₂₈Se₁₂Sb₆₀ waveguides," *Presented at 2015 Conference on Lasers and Electro-Optics (CLEO)*, STh1G.7 (2015).
 73. K. J. Underwood, A. M. Jones and **J. T. Gopinath**, "Synthesis of coherent optical pulses using a field-programmable gate array (FPGA)-based gradient descent phase locking algorithm with three semiconductor lasers," *Presented at 2015 Conference on Lasers and Electro-Optics (CLEO)*, SM3F.3 (2015).
 74. S. N. Alperin, M. E. Siemens, R. D. Niederriter, and **J. T. Gopinath**, "Measuring orbital angular momentum of light with a single, stationary lens," *Presented at 2015 Conference on Lasers and Electro-Optics (CLEO)*.
 75. R. D. Niederriter, M. E. Siemens, and **J. T. Gopinath**, "Fiber Optic Sensors Based on Orbital Angular Momentum," *Presented at 2015 Conference on Lasers and Electro-Optics (CLEO)*, SM1L.5 (2015).
 76. A. M. Jones and **J. T. Gopinath**, "Beam quality improvement of broad-area laser diodes by fast-to-slow axis mode imaging," *Presented at Conference on Lasers and Electro-Optics (CLEO) (June 2013)*, JW1J.3.
 77. R. D. Niederriter, **J. T. Gopinath**, and M. E. Siemens, "Variable-focus method for characterizing general astigmatic laser beams," *Presented at Conference on Lasers and Electro-Optics (CLEO) (June 2013)*, CTu3D.
 78. M. R. Krogstad, E. Rengnath, W. Park, and **J. T. Gopinath**, "Third-order nonlinearities of Ge₂₈Sb₁₂Se₆₀ for waveguide devices," *Presented at Conference on Lasers and Electro-Optics (CLEO) (June 2013)*, JW2A.
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- Y. Fan, and F. X. Kaertner, High-Energy, "Picosecond, Cryogenic Yb:YAG Chirped-Pulse Amplifier at kHz Repetition Rates for OPCPA Pumping," *Presented at 2010 Conference on Lasers and Electro-Optics (CLEO) (June 2010)*, JThD2.
81. **J. T. Gopinath**, K. F. Wall, J. Hybl, P. F. Moulton, and T.Y. Fan, "High-Power, Actively Modelocked Cryogenic Yb:YAG Laser," *Presented at 2010 Advanced Solid-State Photonics (ASSP) (Feb. 2010)*, AWB22.
 82. K. H. Hong, **J. T. Gopinath**, D. Rand, A. Siddiqui, J. Moses, J.-C. Lai, J. Hybl, T. Y. Fan, and F. X. Kaertner "Generation of 2-kHz, 40-mJ picosecond pulses from a cryogenic Yb:YAG chirped-pulse amplifier for OPCPA pumping," *Presented at 2010 Advanced Solid-State Photonics (Feb 2010)*, Postdeadline paper.
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J. Gopinath, E. Gibson, V.M. Bright, R. Weir, D. Restrepo and B. Ozbay, "Optical Imaging Devices and Variable-Focus Lens Elements, and Methods for Using Them," Issued on 08/19/19 (European Patent 3, 097,443 B1); Issued 4/28/20 (US patent 10,634,899).

J.J. Brown, O. Supekar, V.M. Bright, **J. T. Gopinath**, A.R. Greenberg, "Methods and Devices for Real-Time Detection of Fouling Chemistry," Issued on 7/20/21 (US patent 11,067,511 B2)

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INVITED PRESENTATIONS

IIT Roorkee, Optical Traveling Lecturer (Fall 2023)

Vescent Photonics Seminar (Fall 2023)

Columbia University and CUNY ASRC Seminar (Spring 2022)

MNIT Jaipur, IEEE Photonics Society Student Chapter
and SPIE Student Chapter, Webinar (Summer 2021)

University of Southern California, Photonics Seminar (Fall 2021)

Ball Aerospace, Seminar (Spring 2020)

NIST Applied Physics Division Seminar, Boulder (Fall 2019)

DMMI Workshop on Domestic Manufacturing Capabilities for Critical DoD
Applications: Emerging Needs in Quantum Enabled Systems, Invited Panelist
(Spring 2019)

Enabling Quantum Materials Workshop, Louisiana State University,
Invited Speaker (Spring 2019)

Kansas State University, OSA Traveling Lecturer (Spring 2019)

University of Denver, Physics Colloquium (Spring 2019)

University of Texas at Austin (Fall 2018)

Donostia International Physics Center, Seminar (Spring 2018)

University of Colorado Boulder, Physics Colloquium (Fall 2017)

Miami University, Physics Colloquium (Spring 2017)

University of Minnesota, Electrical Engineering Colloquium (Fall 2016)

Harvard University, CEAS Seminar (2016)

IEEE Boston Photonics Society, Seminar (2016)

Ball Aerospace, Research Seminar (2015)

NIST Boulder, Research Seminar (2015)

Cornell University, Electrical Engineering Seminar (2015)

University of California San Diego, Electrical Engineering Seminar (2015)

University of Colorado-Boulder, IONS Conference Seminar, Boulder CO
(2015)

University of Colorado-Boulder, Research Seminar Series on Optical,
Electronic and Quantum Systems (2014)

Colorado School of Mines, Research Seminar (2013)

University of Colorado-Boulder, Physics Department Condensed Matter
Seminar (2010)

China Lake Naval Air Warfare Center, Seminar Speaker (2010)

University of Colorado-Boulder, Electrical and Computer Engineering
Department Seminar (2008) and (2014)

Colorado State University, Electrical and Computer Engineering Department
Seminar (2007)