

Tingyi Gu

106 Evans Hall, 139 The Green, Newark, DE 19716
Phone: (302) 831-3846 Email: tingyigu@udel.edu

EDUCATION

Columbia University, Graduate School of Arts and Sciences New York, NY
Ph.D. in Electrical Engineering Oct. 2010 – Oct. 2014
Columbia University, The Fu Foundation School of Engineering and Applied Sciences New York, NY
M.S. in Electrical Engineering May 2009 – Oct. 2010
Shanghai Jiao Tong University, School of Electronic Information Shanghai, China
B.S. in Information Technology. Honor Class Sep. 2004 – Jun. 2008

EMPLOYMENT

Department of Electrical and Computer Engineering, University of Delaware, Newark, DE
Sep. 2016 – present Assistant Professor
PRISM, Princeton University, Princeton, NJ
Jun. 2015 – Aug. 2016 PRISM Fellow (Prof. Craig Arnold and Prof. Claire Gmachl)
Hewlett-Packard Laboratories, Palo Alto, CA
Oct. 2014 - May. 2015 Postdoctoral Research Scientist (Dr. Ray G. Beausoleil)
Alcatel-Lucent Bell Laboratories, Holmdel, NJ
Aug. 2013 - Oct. 2013 Summer Intern

HONORS & AWARDS

Oct. 2019 *ARO* Young Investigator Program Award
Oct. 2017 *AFOSR* Young Investigator Program Award (43 Nationwide)
Jul. 2017 *NASA* Early Faculty Career Award (8 Nationwide)
Sep. 2012 *IEEE Photonics Society* Graduate Student Fellowship (8 Nationwide)
Feb. 2012 *SPIE* Graduate Scholarship in Optics & Photonics

Achievements of Supervised Students

Dec. 2020 Graduate student Anishkumar Soman received 2020 *IEEE Photonics Society Award*
Jun. 2020 Graduate student Zi Wang completed a summer intern at *Nokia Bell Lab* on fiber optical communication (Holmdel, NJ)
April 2020 Graduate student Hwaseob Lee receives *Incubic/Milton Chang Travel Fund from CLEO*
April 2020 Graduate student Yahui Xiao received *Udel Charles Ih Fellowship*
April 2020 Undergraduate Alec receives *NASA Delaware space grant summer research scholarship* on developing high temperature platform for in-situ testing of optoelectronic devices
Jun. 2019 Graduate student Dun Mao completed a summer intern at *Nokia Bell Lab* on design and test the high-speed silicon photonic transceivers (Holmdel, NJ)
Apr. 2019 Graduate student Anishkumar Soman received *Udel Summer Doctoral Fellowship Award* for collaborative work at Princeton University
Apr. 2019 Alec Scallo and Lorry Chang are selected for the University of Delaware's Undergraduate Research Program for their summer intern in lab
Apr. 2018 Graduate student Anishkumar Soman received *Udel Summer Doctoral Fellowship Award* for 2D material collaborative work at Army Research Lab at Adelphi
Mar. 2018 Graduate student Hwaseob Lee received *UD Bendett Fellowship*
Mar. 2018 Graduate student Zi Wang received *UD Charles Ih Fellowship*
Mar. 2017 Graduate student Dun Mao received *UD Bendett Fellowship*

- Mar. 2017 Graduate student Anishkumar Soman received *UD Charles lh Fellowship*
 Sep. 2017 Graduate student Anishkumar Soman received *UD Professional Development Award*
 April 2017 Undergraduate Thomas Kananen and Nathan's work won NASA Delaware space grant summer research scholarship

JOURNAL PUBLICATIONS

UNDER REVIEW

1. T. Kananen, A Soman, Z. Wang, M. Wiggins, K. Booksh and **T. Gu***, Photonic-plasmonic phase matching enhanced far infrared absorption in graphene, submitted
2. Z. Wang, L. Chang, F. Wang, T. Li and **T. Gu***, Integrated metasurface system for diffractive neural network, submitted

PUBLISHED (citations >1100)

3. [Invited] Y. Xiao, Z. Wang, F. Wang, H. Lee, T. Kananen, T. Gu, Engineering the light coupling between metalens and photonic crystal cavity for robust on-chip microsystem, *Journal of Optical Microsystems* (2021)
4. F. Wang, X. Niu, X. Hu*, **T. Gu***, X. Wang, J. Yang, H. Yang, T. Ao, S. Wang and Q. Gong, All-Optical Mode-selective Router Based on Broken Anti-PT Symmetry, *Physical Review Applied* 14 (4), 044050 (2020)
5. [invited] D. Mao[†], C. Cheng[†], F. Wang, Y. Xiao, T. Li, A. Soman, T. Kananen, X. Zhang, M. Krainak, P. Dong and **T. Gu***, Device architectures for low voltage and ultrafast graphene integrated phase modulators, *IEEE Photonics Society Journal of Selected Topics in Quantum Electronics* 27 (2), 1-9 (2020)
6. D. Mao, M. Chen, X. Ma, A. Soman, H. Xing, T. Kananen, N. Augenbraun, C. Cheng, M. Doty and **T. Gu***, Sub-bandgap laser patterning of planar chalcogenide photonics, *Optical Material Express* 10 (9), 2126-2134 (2020)
7. A. Soman[†], R. A. Burke[†], Q. Li[†], M. D. Valentin, T. Li, D. Mao, M. Dubey, and **T. Gu***, Hydrogen plasma exposure of monolayer MoS₂ FET and protection by monolayer graphene, *ACS Applied Materials & Interfaces* 12 (33), 37305-37312 (2020)
8. Y. Wang, K. Gu, A. Soman, **T. Gu**, R. A. Register, Y.-L. Loo and R. D. Priestley, Circumventing Macroscopic Phase Separation in Immiscible Polymer Mixtures by Bottom-Up Deposition, *Macromolecules* 53, 5740–5746 (2020)
9. H. Zhou, X Zhu, **T. Gu**, J. Wu, G. Deng, S. Huang, N. Ophir, M. Yu, D. Kwong, S. Zhou, K. Bergman and C. W. Wong, Error-free data transmission through fast broadband all-optical modulation in graphene-silicon optoelectronics, *Applied Physics Letters* 116, 221106 (2020)
10. Q. Li, Y. Wang, T. Li, W. Li, F. Wang, A. Janotti, S. Law and **T. Gu***, Micro-Raman study of strain in molecular beam epitaxial grown chalcogenide thin film, *ACS Omega* 5, 8090-8096 (2020)
11. F. Wang, Z. Wang, D. Mao, M. Chen, T. Kananen, A. Soman, X. Hu, C. Arnold and **T. Gu***, Light emission from self-assembled and laser-crystallized chalcogenide metasurface, *Advanced Optical Materials* 1901236 (2020)
12. Q. Li, Y. Gou, T.-G. Wang, **T. Gu***, Q. Yu and L. Wang, Study on Local Residual Stress in the Nanocrystalline Cr₂O₃ Coating by Micro-Raman Spectroscopy, *Coatings* 9, 500 (2019)
13. Z. Wang, T. Li, A. Soman, D. Mao, T. Kananen and **T. Gu***, On-chip wavefront shaping with dielectric metasurface, *Nature Communication* 10, 3547 (2019)
14. A. Soman, U. J Nsofor; U. Das, **T. Gu** and S. Hegedus, Correlation between in situ diagnostics of the hydrogen plasma and the interface passivation quality of hydrogen plasma post-treated a-

- Si: H in Silicon Heterojunction Solar Cells, *ACS Applied Materials & Interfaces* 11, 16181 (2019)
15. H. Lee, T. Kananen, A. Soman and **T. Gu***, Influence of surface roughness on microring based phase shifters, *Photonic Technology Letters* 11, 813-816 (2019)
 16. D. Mao, T. Kananen, J. Sinsky, N. W. Petrone, J. Hone, P. Dong and **T. Gu***, Bandwidth limitation of directly contacted graphene-silicon optoelectronics, *ACS Applied Electronic Materials* 1, 172 (2019)
 17. T. Li, D. Mao, N. Petrone, R. Grassi, H. Hu, Y. Ding, Z. Huang, M. Yu, G. Lo, D.-L. Kwong, J. C. Hone, T. Low, C. W. Wong and **T. Gu***, Spatially controlled electrostatic doping in graphene p-i-n junction for hybrid silicon photodiode, *npj 2D Materials and Applications* 2, 36 (2018)
 18. **T. Gu**, J. Gao, E. E. Ostoumov, H. Jeong, F. Wu, R. Fardel, N. Yao, R. D. Priestley, G. D. Scholes, Y.-L. Loo and Craig B. Arnold, Photoluminescence of functionalized germanium nanocrystals embedded in arsenic sulfide glass, *ACS Applied Materials Interfaces* 9, 18911 (2017)
 19. **T. Gu**, H. Jeong, K. Yang, F. Wu, N. Yao, R. D. Priestley, C. White and C. B. Arnold, Anisotropic crystallization of solution processed chalcogenide thin film by polarized laser, *Applied Physics Letters* 110, 041904 (2017)

Prior to tenure track:

20. D. Joung, **T. Gu**, J.-H. Cho, Tunable optical transparency in self-assembled three-dimensional polyhedral graphene oxide, *ACS Nano* 10, 9586 (2016)
21. H. Zhou, **T. Gu**, J. F. McMillan, M. Yu, D.-L. Kwong, C. W. Wong, Enhanced photoresponsibility in graphene-silicon slow-light photonic crystal waveguides, *Applied Physics Letters* 14, 111106 (2016)
22. [Invited] P. Dong, Y. Chen, **T. Gu**, Larry L. Buhl, David T. Neilson and Jeffery H. Sinsky, Reconfigurable 100Gb/s silicon photonic Networks-on-chip, *OSA/IEEE Journal of Optical Communications and Networking* 7, A37-A43 (2015)
23. [ACS editor's choice] **T. Gu**, A. Andryieuski, Y. Hao, C. W. Wong, J. C. Hone, A. Lavrinenko, T. Low and T. F. Heinz*, Photonic and plasmonic guided modes in graphene-silicon photonic crystals, *ACS Photonics* 11, 1552-1558 (2015)
24. **T. Gu***, M. Yu, D.-L. Kwong, and C. W. Wong, Molecular absorption induced thermal bistability in PECVD silicon nitride ring resonators, *Optics Express* 22, 18412-18420 (2014)
25. **T. Gu**, Y. Chen, C. W. Wong and P. Dong, Cascaded uncoupled dual-ring modulator, *Optical Letters* 39, 4974-4977 (2014)
26. [invited] **T. Gu***, N. Petrone, A. van der Zande, J. Hone, M. Yu, G.-Q. Lo, D.-L. Kwong and C. W. Wong, Optical bistability and free carrier dynamics in graphene-silicon photonic crystal cavities, *Optics Communications, Special issue on Energy efficient nanophotonics: engineered light-matter interaction in sub-wavelength structures* 314, 23-27 (2014)
27. J. Yang, **T. Gu***, J. Zheng, M. Yu, P. Lo, D.-L. Kwong and C. W. Wong, Radio-frequency regenerative oscillations in silicon high-Q heterostructured photonic crystal cavities, *Applied Physics Letters* 104, 061104 (2014)
28. H. Zhou, **T. Gu**, J. F. McMillan, N. Petrone, A. van der Zande, J. C. Hone, M. Yu, G. Lo, D.-L. Kwong, G. Feng, S. Zhou and C. W. Wong, Enhanced four-wave mixing in graphene-silicon slow-light photonic crystal waveguides, *Applied Physics Letters* 105, 091111 (2014)
29. O. Ajayi, Nick C. Anderson, M. Cotlet, N. Petrone, **T. Gu**, F. Gesuele, J. Hone, J. S. Owen, and C. Wei Wong, Time-resolved energy transfer and blinking statistics of single chloride-terminated nanocrystals on graphene, *Applied Physics Letters* 104, 171101 (2014)
30. B. Chen, C. Meng, W. Li, **T. Gu**, X. Guo, D. Wang, S. Lin and L. Tong, All optical modulation in graphene coated ZnO nanowire optical waveguides, *Optics Express* 22, 24276 (2014)

31. X. Luan, Y. Huang, Y. Li, J. McMillan, J. Zheng, S.-W. Huang, P.-C. Hsieh, **T. Gu**, D. Wang, A. Hati, D. Howe, G. Wen, M. Yu, G. Lo, D. Kwong, C. W. Wong, An integrated low phase noise radiation-pressure-driven optomechanical oscillator chipset, *Scientific Reports* 4, 6842 (2014)
32. [invited] **T. Gu***, H. Zhou, J. F. McMillan, N. Petrone, A. van der Zande, J. Hone, M. Yu, G.-Q. Lo, D.-L. Kwong and Chee Wei Wong, Coherent four-wave mixing on hybrid graphene-silicon photonic crystals, *IEEE Photonics Society Journal of Selected Topics in Quantum Electronics* 99, 1-1 (2013)
33. [Cover article] **T. Gu***, N. Petrone, J. F. McMillan, A. van der Zande, M. Yu, G. Lo, D.-L. Kwong, J. Hone, and C. W. Wong*, Regenerative oscillation and four-wave mixing in graphene optoelectronics, *Nature Photonics* 6, 554 (2012)
34. **T. Gu***, S. Kocaman, X. Yang, J. F. McMillan, M.-B. Yu, G.-Q. Lo, D.-L. Kwong, and C. W. Wong, Deterministic integrated tuning of multi-cavity resonances and phase for slow-light in coupled photonic crystal cavities, *Applied Physics Letters* 98, 121103(2011)
35. C. J. Chen, J. Zheng, **T. Gu**, J. F. McMillan, M. Yu, G.-Q. Lo, D.-L. Kwong, and C. W. Wong, Selective tuning of high-Q silicon photonic crystal nanocavities via laser-assisted local oxidation, *Optics Express* 19, 12480-12489 (2011)
36. **T. Gu**, Z. Han, K. Wu, J. Chen, Optimization of the threshold voltage of an image intensifier in nanosecond photocathode gating, *Journal of optoelectronics and advanced materials* 12, 360-364 (2010); featured in Electronics weekly, VerticalNews (April 21st, 2010)
37. **T. Gu**, M. El-Emawy, K. Yang, A. Stintz, and L. F. Lester, Resistance to edge recombination in GaAs-based dots-in-a-well solar cells, *Applied Physics Letters* 95, 261106 (2009)
38. N. J. Withers, K. Sankar, B. A. Akins, T. A. Memon, **T. Gu**, J. Gu, G. A. Smolyakov, M. R. Greenberg, T. J. Boyle, and M. Osinski, Rapid degradation of CdSe/ZnS colloidal quantum dots exposed to gamma irradiation, *Applied Physics Letters* 93, 173101 (2008)

* correspondent author

[Book chapter] **T. Gu** & C. W. Wong, Graphene, optical nonlinearity and optoelectronic devices, Nanomaterials, polymers and devices: materials functionalization and device fabrications 978-0-470-04806-1 Wiley, Inc. (2015)

CONFERENCE PUBLICATIONS (34)

1. H. Lee, A. Soman, T. Li, T. Kananen, D. Mao, S. K. Ozdemir, T. Gu, Electro-optic tuning of non-Hermiticity in a silicon microring resonator, CLEO (2021)
2. D. Mao, Y. Xiao, F. Wang, A. Soman, T. Li, T. Kananen, T. Gu, Design of graphene-active silicon photonic modulator, CLEO (2021)
3. F. Wang, L. Zhao, H. Lee, Y. Xiao, T. Li, Y. Wang, A. Soman, T. Kananen, X. Hu, B. P. Rand, and T. Gu, Controlling the extinction ratio of microring resonators by perovskite nonlinearity, CLEO (2021)
4. T. Li, Y. Wang, H. Xing, Q. Li, F. Wang, A. Soman, S. Law and T. Gu, Nonvolatile switching in In₂Se₃-silicon microring resonators, CLEO (2021)
5. Y. Xiao, Z. Wang, F. Wang, H. Lee, T. Gu, Optimization of the light coupling between metalens and photonic crystal resonators for robust on-chip microsystems, CLEO (2021)
6. Z. Wang, L. Chang, T. Gu, Integrated photonic device design by Generative Adversarial Networks, CLEO (2021)
7. T. Gu, Y. Xiao, Z. Wang, D. Mao, F. Wang, T. Li, H. Lee, Foundry integrated nanophotonic devices and metasystems, *Frontiers in Optics* FW1B. 1 (2020)
8. H. Lee, T. Li, C. Cheng, S. K. Ozdemir, T. Gu, Active tuning of silicon photonic microring resonator towards a chiral exceptional point, *Frontier in Optics* FW4D.4 (2020)
9. Y. Xiao, Z. Wang, F. Wang, H. Lee, T. Kananen, **T. Gu**, Robust Light Coupling to Photonic Crystal Waveguide Using Integrated Metalens, *CLEO: Science and Innovations*, JTh2B. 20 (2020)

10. H. Lee, F. Wang, T. Li, A. Scallo, Z. Wang and **T. Gu**, Topological compensation of Rayleigh scattering induced reflection in a single mode waveguide, *CLEO: QELS_Fundamental Science*, FTu4A. 1 (2020)
 11. F. Wang, Y. Xiao, T. Kananen, T. Li, Z. Wang, H. Lee, X. Hu and **T. Gu**, Low-loss photonic crystal platform by foundry processing, *CLEO: QELS_Fundamental Science*, JTu2D. 28 (2020)
 12. Z. Wang, L. Chang, F. Wang, T. Li and **T. Gu**, Machine Learning with integrated metasystem, *CLEO: Science and Innovations*, SF2O. 8 (2020)
 13. [Invited] Z. Wang, T. Li, L. Chang, F. Wang, Y. Xiao, D. Mao, T. Kananen, **T. Gu**, On-chip wavefront shaping with dielectric metasurface, *Proc. SPIE 11290, High Contrast Metastructures IX*, 112900I (2020)
 14. M. Krainak, S. Tedder, H. Jiao, J. Klamkin, K. Bergman, I. Datta, M. Lipson, S. Daudlin, A. Rizzo, S. Mookherjea, S.-Ti. Ho, L. Johansson, H. Atwater, F. Aflatouni, **T. Gu**, Photonic Integrated Circuits for Free-Space Optical Communications, *2019 IEEE Avionics and Vehicle Fiber-Optics and Photonics Conference (AVFOP)* (2019)
 15. [Postdeadline] Z. Wang, T. Li, A. Soman, **T. Gu**, On-chip wavefront shaping with dielectric metasurface, *Frontier in Optics* FTu6B.3 (2019)
 16. **T. Gu**, D. Mao, T. Li, T. Kananen, High Detectivity in CMOS Substrate Powered Graphene p-i-n Junction, *IEEE Research and Applications of Photonics in Defense Conference* (2019)
 17. **T. Gu**, Graphene Modified Plasmonic Sensors, *National Aerospace & Electronics Conference* (2019)
 18. Z. Wang, T. Li, A. Soman, **T. Gu**, On-chip Wavefront Shaping with High Contrast Dielectric Metalens, *CLEO: Science and Innovations*, SM1J. 2 (2019)
 19. D. Mao, M. Chen, N. Augenbraun, A. Soman, X. Ma, T. Kananen, M. Doty and **T. Gu**, Micromachining of Chalcogenide Waveguides by Picosecond Laser, *CLEO: Science and Innovations*, SF3O. 5 (2019)
 20. T. Kananen, A. Soman, A. Malkani, Z. Wang, B. Xu, **T. Gu**, Graphene Modified Plasmonic Guided Mode for CO₂ Detection, *CLEO: QELS_Fundamental Science*, FTh4C. 4 (2019)
 21. H. Lee, T. Li, Z. Wang, A. Soman, A. Scallo, **T. Gu**, Spatially locked mode in defected microring resonators, *CLEO: QELS_Fundamental Science*, FTu4B. 7 (2019)
 22. A. Soman, R. Burke, Q. Li, M. Valentin, E. Zakar, U. Nsofor, S. Hegedus, U. Das, J. Shi, Y. Zhang, **T. Gu**, Hydrogen plasma treatment of MoS₂, *CLEO: Science and Innovations*, JTu2A. 118 (2019)
 23. M. Krainak, et. al., Integrated photonics for NASA applications, *International Society for Optics and Photonics, Components and Packaging for Laser Systems V*, vol. 10899, p. 108990F (2019)
 24. H Lee, T Kananen, C Santori, JS Pelc, R Bose, R. G. Beausoleil, **T Gu**, Microring resonator based compact on-chip phase tuner, *CLEO: QELS_Fundamental Science*, JW2A. 36 (2018)
 25. D Mao, T Kananen, J Sinsky, N Petrone, J Hone, P Dong, **T Gu**, Small-signal model for heterogeneous integrated graphene-silicon photonics, *CLEO: Science and Innovations*, SM2B. 4 (2018)
- Prior to tenure track:**
26. **T. Gu**, C. Lu, A. W. Rodriguez and C. B. Arnold, Spatially modulated directional light emission in solution processed chalcogenide photonic crystals, *MRS Proceedings* GG8.05 (2015)
 27. **T. Gu**, N. Petrone, A. van der Zande, Y. Li, T. Heinz, P. Kim, J. Hone, C. W. Wong, C. M. Santori, and R. Beausoleil, Photocurrent gain in graphene-silicon p-i-n junction, *CLEO: Science and Innovations* SW4N (2015)
 28. **T. Gu**, C. Lu, T. Heinz, A. Rodriguez, and C. Arnold, Solution processed chalcogenide photonic crystal, *CLEO: Science and Innovations* STh1G (2015)
 29. A. Andryieuski, **T. Gu**, Y. Hao, Y. Li, J. Hone, C. W. Wong, A. Lavrinenko, T. Low and T. Heinz, Photonic and plasmonic guided modes in graphene-silicon photonic crystals, *ICMAT15-A-2501* (2015)
 30. K. M. Durney, R. J. Nims, **T. Gu**, M. Albro, L. Karbowski, A. Singh, S. Vukelic, C. Hung, G. Ate-

shian, Raman spectrographic characterization of cartilage matrix swelling via lysyl oxidase inhibition in immature explants and tissue constructs, *Orthopaedic Research Society Annual Meeting*, No. 0324 (2015)

31. **T. Gu**, P. Dong, C. W. Wong and Y. K. Chen, Enhanced modulation performance by cascaded uncoupled dual-ring, *CLEO: Science and Innovations* SM2G.1 (2014)
32. H. Zhou, **T. Gu**, J. F. McMillan, N. Petrone, A. van der Zande, J. Hone, M.-B. Yu, G.-Q. Lo, D.-Lee Kwong, and C. W. Wong, Four-wave mixing in slow-light graphene-silicon photonic crystal waveguide, *CLEO:QELS Fundamental Science* FF1K.8 (2014)
33. P. Dong, Y.-K. Chen, **T. Gu**, L. L. Buhl, D. T. Neilson and J. H. Sinsky, Reconfigurable 100 Gb/s silicon photonic Networks-on-chip, *Optical Fiber Communications* Th4G. 2 (2014)
34. [Postdeadline] X. Luan, J. F. McMillan, Y. Huang, **T. Gu**, M. Yu, G. Lo, D. Kwong, and C. W. Wong, Subharmonics generation based on synchronization of self-pulsation and optomechanical oscillation in a monolithic silicon cavity, *CLEO: Applications and Technology* JTh4B.5 (2014)
35. [Postdeadline] **T. Gu**, N. Petrone, J. F. McMillan, A. van der Zande, M.-B. Yu, G. Lo, D.-L. Kwong, J. Hone, and C. W. Wong, Regenerative oscillation and four-wave mixing in graphene optoelectronics, *CLEO: Applications and technology* CTh5C (2012)
36. **T. Gu**, J. Zheng, J. F. McMillan, M. Yu, G. Lo, D. Kwong, and C. W. Wong, Stochastic bistable switching in CMOS processed SiN rings, *CLEO: Science and Innovations* CM4A.6 (2012)
37. J. Yang, **T. Gu**, J. Zheng, X. Yang, M. Yu, P. Lo, D. Kwong, C. W. Wong, Observations of temporal regenerative oscillations in high-*Q* heterostructured photonic crystal cavities, *CLEO: Science and Innovations* CW3K.1 (2012)
38. **T. Gu**, S. Kocaman, X. Yang, J. F. McMillan, J. Zheng, M. Yu, G. Lo, D. Kwong, and C. W. Wong, Deterministic resonance and phase control for photonic sub- and super-radiance in coupled nanocavities, *CLEO Proc.* JTuI39 (2011)
39. **T. Gu**, S. Kocaman, X. Yang, J. McMillan, M. Yu, D. Kwong, and C. W. Wong, Chip-scale integrated tuning of slow- and fast-light in all-optical analogue to multi-EIT in photonic crystal cavities, *CLEO proc.* CTuHH2 (2010)
40. **T. Gu** and C. Jiang, Time domain numerical observation of superluminal pulse in photonic band-gap structures, *Frontier in Optics* AThB5 (2009)
41. **T. Gu**, K. Yang, M. A. El-Emawy, A. Stintz, and L. F. Lester, Suppression of edge recombination in InAs/InGaAs DWELL solar cells, *MRS Proceedings* 1210-Q01-07 (2009)
42. N. J. Withers, K. Sankar, B. A. Akins, T. A. Memon, J. Gu, **T. Gu**, S. T. Bowers, M. R. Greenberg, G. A. Smolyakov, R. D. Busch, M. Osinski, Effects of gamma irradiation on optical properties of colloidal nanocrystals, *MRS Proceedings* 1038-O09-05 (2008)

PATENT APPLICATIONS (3)

1. **T. Gu**, C. W. Wong, Optical signal processing with graphene-silicon hybrid optoelectronics, WO2013/109446 (2013)
2. **T. Gu**, C. Santori, N. Ge, Spatially modulated directional light emitter by low cost processing, HP provisional filing (2015)
3. **T. Gu**, M. Fortino, N. Ge, Integrated true random number generator through optics for enhanced security application, HP provisional filing (2015)

INVITED PRESENTATIONS (35)

Invited talk, Frontier in Optics, DC (2020)

Invited talk, IEEE Research and Applications of Photonics in Defense Conference (2020)

Research update report, NASA Glenn Research Center, Cleveland, OH (2020)

Invited talk, Lawrence Symposium on Epitaxy, Scottsdale, AZ (2020)

Invited webinar, OSA Engineer Week Celebration (2020)

Invited talk, SPIE Photonics West, section "High Contrast Metastructures IX", San Francisco, CA

(2020)

International Space Station Flight pre-launch report, Goddard Space Flight Center, Greenbelt, MD

(2019)

Distinguished technical lecture, NASA Glenn Research Center, Cleveland, OH (2019)

Invited talk, "Apollo at 50: To the Moon and Beyond" celebrating the 50th anniversary of the Apollo 11 Moon landing, Newark, DE (2019)

Invited talk, Nokia Bell Labs, Holmdel, NJ (2019)

Department seminar of material science department, University of Delaware, Newark, DE (2018)

Invited talk, AIM photonics members meeting, Syracuse, NY (2018)

Invited talk, State Key Laboratory for Artificial Microstructure and Microscopic Physics, Peking University, Peking, China (2018)

Invited talk, 7th conference on Advances in Optoelectronics and Micro/nano-optics, Xi'an, China (2018)

Invited talk, Goddard Space Flight Center, Greenbelt, MD (2018)

Invited talk, Center for Nanoscale Science and Technology, National Institute of Standards and Technology, Gaithersburg, MD (2017)

Department seminar of Physics and Astronomy, University of Delaware, Newark, DE (2017)

Invited talk, State Key Lab of Fiber Communications, Shanghai Jiao Tong University, Shanghai, China (2016)

Invited talk, International Conference on Optoelectronics and Microelectronics Technology and Application, Shanghai, China (2016)

Invited talk at the 37th PIERS, Shanghai, China (2016)

Postdoc seminar, Princeton University, Princeton, NJ (2016)

Invited talk, DTU Fotonik, Lyngby, Denmark (2016)

Invited talk, SPIE Photonics Europe, Brussels, Belgium (2016)

Invited talk, IBM TJ Watson, Yorktown Heights, NY (2015)

Invited talk, University of Minnesota, Department of Electrical Engineering, Minneapolis, MN (2015)

Invited talk, Israel Institute of Technology, Faculty of Mechanical Engineering TECHNION, Haifa, Israel (2014)

Invited talk, The Chinese University of Hong Kong, Department of Electrical Engineering, China (2014)

Invited talk, Rochester Institute of Technology, Department of Electrical Engineering, Rochester, NY (2014)

Invited job talk, Hewlett-Packard Laboratories, Palo Alto, CA (2014)

Intern presentation, Alcatel-Lucent Bell Labs, Holmdel, NJ (2013)

Invited talk, Zhejiang University, Nanophotonics Research Groups, Hangzhou, Zhejiang, China (2013)

Invited talk, Northeastern University, Physics Department, Boston, MA (2013)

Invited talk, Rutgers, the State University of New Jersey, Department of Electrical and Computer Engineering, New Brunswick, NJ (2013)

Invited talk, National University of Defense Technology, Changsha, Wuhan, China (2013)

Graduate student seminar, Columbia University, Energy Frontier Research Center, New York, NY (2012)

MEDIA REPORTS

- 11/14/2019: Gu receives ARO Young Investigator Award

<https://www.udel.edu/udaily/2020/july/tingyi-gu-army-research-office-young-investigator-program/>

- 11/14/2019: Tiantian, Zi and Dun's works are highlighted on UD EE CURRENTS

https://issuu.com/udengineering/docs/2019_ececurrents_issuu?fr=sYTVIMjUxNjc5MQ

- 10/21/2019: Our graphene and silicon photonic devices are scheduled for launch to ISS from Wal-

lops Flight Facility. Our work is highlighted on NASA EPSCoR ISS Stimuli.
https://www.nasa.gov/sites/default/files/atoms/files/epscor_stimuli_iss_508.pdf

- 9/26/2019: Graduate student Zi Wang's work on on-chip metasurface is reported by UDaily, IEEE spectrum, Phys.org, Newswise, ScienceDaily, nanowerk
<https://www.udel.edu/udaily/2019/september/tingyi-gu-integrated-photonics-nature-communications/>
<https://spectrum.ieee.org/nanoclast/semiconductors/optoelectronics/microsize-lens-pushes-photonics-closer-to-an-onchip-future>
<https://phys.org/news/2019-09-team-photonics.html>
<https://www.newswise.com/articles/compute-at-the-speed-of-light>
<https://www.sciencedaily.com/releases/2019/09/190926122028.htm>
<https://www.nanowerk.com/nanotechnology-news2/newsid=53680.php>

- 3/28/2019: Group's works on high-speed graphene silicon photonic devices are highlighted on UDaily, ScienceDaily, Phys.org, nano werk, rdmag, sohu
https://www.udel.edu/udaily/2019/march/tingy-gu-silicon-graphene-devices/?utm_source=UDaily+Subscribers&utm_campaign=a12a6e4f8f-UDaily_News_Email&utm_medium=email&utm_term=0_0b5034716d-a12a6e4f8f-177532417&fbclid=IwAR2E1fC4vo3OcXZsIk9Z_n3RbrziBGzhY8Er1G6rHIVBpM7NbQ-t4IS-bm8
<https://www.sciencedaily.com/releases/2019/03/190329134756.htm>
<https://phys.org/news/2019-03-explores-graphene-silicon-devices-photonics-applications.html>
https://www.nanowerk.com/nanotechnology-news2/newsid=52468.php?utm_source=feedblitz&utm_medium=FeedBlitzRss&utm_campaign=nanowerkemergingtechnologiesnews
<https://www.rdmag.com/news/2019/03/research-probes-graphene-silicon-devices-photonics-applications>
https://m.sohu.com/a/304579831_313834/?pvid=000115_3w_a

- 10/19/2018: Work with undergraduate students on sending integrated photonic device to space
<https://www.ece.udel.edu/news/2018/rocket-launch/>

- 08/15/2017: Gu receives NASA Early Career Faculty Award
<https://www.udel.edu/udaily/2017/august/tingyi-gu-nasa-grant-photonic-devices/>
<https://www.nasa.gov/directorates/spacetech/strg/ecf17>

- 11/02/2017: Gu receives AFOSR Young Investigator Award
<https://www.udel.edu/udaily/2017/november/tingyi-gu-air-force-investigator-award/>
<https://www.wpafb.af.mil/News/Article-Display/Article/1339310/afosr-awards-grants-to-43-scientists-and-engineers-through-its-young-investigat/>

MENTEES

Postdoc: Yixiu Wang

PhD students: Hasweob Lee (Year 3, ECE), Dun Mao (Year 4, ECE), Zi Wang (Year 3, ECE), Yahui Xiao (Year 1, ECE).

Undergraduate students: Lorry Chang (Junior, ECE), Alec Scallo (Sophomore, ME)

Postdoc Alumini: Tiantian Li (2018-2020)

Graduate Alumni: Thomas Kananen (M.S., ECE), Hwaseob Lee (M.S., ECE, Currently a PhD student in Gu group), Anishkumar Soman (M.S., ECE, currently a PhD student at UD), Feifan Wang (Visiting exchange student, currently at Peking University), Hunter Nicolson (ECE, Currently a PhD student at UCSB), Sunami Morrison (ECE, Currently a PhD at Canada)

Undergraduate Alumni: Mingkun Chen (ECE, Currently a MS student at University of Rochester), Xiangqi Li (ECE), Nathan Walker (ECE), Nathan Augenbranu (ECE)

K-12 STUDENT Alumni: Dustin Fang (Currently at University of Pennsylvania)

Visiting Scholar Alumni: Qiu Li (Currently a tenured Professor at Tianjin University of Technology and Education), Cheng Chen

SERVICE FOR ACADEMIC SOCIETY

Reviewer for: *Advanced Optical Materials, ACS Applied Electronic Materials, Optical Express, Optical Letters, Optical Materials Express, Scientific Report, Nano Letters, Advanced Materials, Applied Physics Letters, Journal of the Optical Society of America B, Applied Physics A, IOPScience Nanotechnology, Journal of Physics D: Applied Physics, Physica Status Solidi, Materials Research Society Proceedings*

Committee member for the *IEEE EDS Optoelectronic Devices* (2021)

Subcommittee chair for the *IEEE Photonics Conference: Optical Interconnects* (2021)

Vice subcommittee chair for the *IEEE Photonics Conference: Optical Interconnects* (2020)

Subcommittee member for the *Frontier in Optics 4B Subcommittee: Photonic Integrated Devices for Computing, Sensing and other Applications* (2019-2020)

Subcommittee member for the *Frontier in Optics 4B Subcommittee: Photonic Integrated Devices for Computing, Sensing and other Applications* (2019)

Subcommittee member for the *Conference on Lasers and Electro-Optics Science & Innovation 6 Subcommittee: Optical Materials, Fabrication, and Characterization* (2019-2021)

Subcommittee member for the *The Glass and Optical Materials Division Annual Meeting* (2018)

Subcommittee member for *Photonics & Electromagnetics Research Symposium Subcommittee: SC3: 2D Materials Photonics and Optics, Part 1 & 2* (2019)

Membership: OSA '09, MRS '09, IEEE '12, Sigma Xi 16', Sigma Delta Epsilon 12'.

SERVICE FOR THE DEPARTMENT AND UNIVERSITY

Search committee of tenure track faculty position in Physics and Astronomy department (2016)

Search committee of lecturer position in Electrical and Computer Engineering department (2016)

Member of Dean's Junior Faculty Advisory Council (2017-2019)

Member of the Board of Senior Thesis Readers (2019-2021)

Thesis Committee for 9 Ph.D. students in electrical engineering, material science and physics

Volunteer K-12 student summer camp (2018-)