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JUNGEUN (JENNY) WON

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EDUCATION

Ph.D., Bioengineering, University of Illinois Urbana-Champaign August 2021
Thesis: Translational optical coherence tomography for quantitative assessments of eardrum biomechanics, effusions, and biofilm response during otitis media
Advisor: Stephen A. Boppart, M.D., Ph.D.

M.S., Bioengineering, University of Illinois Urbana-Champaign December 2017
Thesis: Quantifying tympanic membrane dynamics in otitis media using low coherence interferometry, Advisor: Stephen A. Boppart, M.D., Ph.D.

B.S., Biomedical Engineering, Minor in Optics, University of Rochester May 2015

PROFESSIONAL EXPERIENCE

Assistant Professor of Research, Dept. of Ophthalmology (secondary) Aug 2024 – current
University at Buffalo, Buffalo, NY

Assistant Professor of Research, Dept. of Biomedical Engineering Jan 2024 – current
University at Buffalo, Buffalo, NY

Postdoctoral Associate, Dept. of Electrical Eng and Computer Sci Aug 2021 – Jan 2024
Massachusetts Institute of Technology, Cambridge, MA
Advisor: James G. Fujimoto, Ph.D.

AWARDS AND PROFESSIONAL DEVELOPMENT

Faculty Launch & Mentoring Program, UB 2025
Emerging Vision Scientist Program, National Alliance for Eye and Vision Research 2024
Center For Visual Science Symposium Travel Fellowship, University of Rochester 2024
Strategic Preparation for Academic Resilience and Know-how Faculty Program, UIUC 2021
Bob Bilger Graduate Student Award, UIUC 2020
Baxter Young Investigator Award, Baxter International Inc. 2019

Biannual Symposium Travel Award, International Society for Otitis Media	2019
Mavis Future Faculty Fellowship, UIUC	2018
McGinnis Medical Innovation Graduate Fellowship, UIUC	2018
Nadine Barrie Smith Memorial Fellowship, UIUC	2017
Department of Bioengineering Scholarship, UIUC	2015
Walt and Bobbi Makous Prize for Vision Research, University of Rochester	2015
Xerox Engineering Research Fellowship, University of Rochester	2014
Optica Frontiers in Optics Travel Award, Optica	2014

GRANTS AND CONTRACTS

Current Funding

1. Design and 3D prototyping handheld optical imaging probe, PI: **Jungeun Won** PhD, UB Research and Creative Activities for Undergraduates Program (VPRED Experiential Learning), May – Nov 2024, $9,750.
2. Long-range, volumetric middle ear imaging towards pediatric otitis media, PI: **Jungeun Won** PhD, Co-Is: Michele M. Carr MD PhD, Department of Otolaryngology and Chelsie E. Armbruster PhD, Department of Microbiology,
   Jan – Dec 2025, UB CTSI Translational Pilot Studies Program $49,700.
3. Developing physics-informed, artificial intelligence-assisted optical imaging platform to study human retina, PI: **Jungeun Won** PhD. Jan – Dec 2025, UB Research and Creative Activities for Undergraduates Program (VPRED Experiential Learning), $10,460.

PUBLICATIONS AND TECHNICAL PRESENTATIONS

Google Scholar: https://scholar.google.com/citations?user=966omi8AAAAJ&hl=en

Refereed Journal Articles (* denotes co-first author)

In revision

1. **Won J.*,** Yaghy A.*, Ploner S., Kaiser S., Hwang Y., Maier A., Waheed N.K., and Fujimoto J.G., "High-resolution, motion corrected, volume fused optical coherence tomography reveals longitudinal changes in subretinal drusenoid deposits in intermediate dry age-related macular degeneration", *in revision, Translational Vision Science & Technology – Special Issue on New Frontiers in OCT* (2025).

Published

2. Takahashi H., Hwang Y., **Won J.,** Jamil M.U., Yaghy A., Liang M., Baumal C.R., Witkin A.J., Ohno-Matsui K., Duker J.S., Fujimoto J.G., and Waheed N.K., "Blood flow speed of retinal microaneurysms in eyes with diabetic retinopathy quantified by high-speed OCTA using variable interscan time analysis", *accepted, Translational Vision Science & Technology,* **14**(2), 27 (2025). [link]
3. Hwang Y., Takahashi H., **Won J.,** Yaghy A., Marmalidou A., Kaiser S., Jamil M.U., Baumal C.R., Waheed N., and Fujimoto J.G., "Quantification of capillary blood flow

speeds in diabetic retinopathy using variable interscan time analysis (VISTA) OCTA", *Retina*, **45**(1), 35-43 (2025). [link]

4. Jamil U.M.*, **Won J.*,** Marmalidou A., Ploner S., Takahashi H., Kaiser S., Hwang Y., Abu-Qamar O., Yaghy A., Witkin A.J., Zhao P.Y., Desai S., Duker J.S., Maier A., Fujimoto J.G., and Waheed N., "High-resolution OCT reveals age-associated variation in the region posterior to ELM", *Translational Vision Science & Technology*, **14**(1), 16 (2025). [link]
5. **Won J.,** Takahashi H., Ploner S., Karbole W., Abu-Qamar O., Yaghy A., Marmalidou A., Kaiser S., Hwang Y., Lin J., Witkin A., Desai S., Baumal C.R., Maier A., Curcio C., Waheed N., and Fujimoto J.G., "Topographic measurement of the sub-retinal pigment epithelium space in normal aging and age-related macular degeneration using high-resolution OCT", *Investigative Ophthalmology & Visual Science*, **65**(10), 18 (2024). [link]
6. Hwang Y., **Won J.,** Yaghy A., Takahashi H., Girgis J.M., Lam K., Chen S., Moult E.M., Ploner S.B., Waheed N.K., and Fujimoto J.G., "Retinal blood flow speed quantification at the capillary level using temporal autocorrelation fitting [Invited]", *30 Years of Optical Coherence Tomography feature issue of Biomedical Optics Express*, **14**(6), 2658-2677 (2023). **Editor's Pick.** [link]
7. **Won J.,** Monroy G.L., Khampang P., Barkalifa R., Hong W., Chaney E., Aksamitiene E., Porter R.G., Novak M.A., Spillman D.R., Kerschner J.E., and Boppart S.A., "*In vivo* optical characterization of middle ear effusions and biofilms during otitis media", *Journal of the Association for Research in Otolaryngology*, **24**, 325-337 (2023). [link]
8. Huang C., Ginn T., Clark G., Zaki F., **Won J.,** Boppart S.A., and Nguyen H., "Phosphate-based corrosion inhibition in drinking water systems and effects on disinfectant decay and biofilm growth", *Environmental Engineering Science*, **40**(11), 634-644 (2023). [link]
9. Zhang C., Zaki F., **Won J.,** and Boppart S.A., "A multimodal nonlinear optical microscopy study of the responses of *Pseudomonas aeruginosa* to blue light and antibiotic treatment", *Journal of Biophotonics*, e202300384 (2023). [link] IF: 2.8, Citations: 3, Q2 Engineering.
10. Huang C., Clark G., Zaki F., **Won J.,** Ning R., Boppart S.A., Elbanna A.E., and Nguyen T.H., "Effects of phosphate and silicate on stiffness and viscoelasticity of mature biofilms developed with simulated drinking water*", Biofouling,* **39**(1), 36-46 (2023). [link]
11. Locke A.*, Zaki F.R.*, Fitzgerald S., Sudhir K., Monroy G.L., Choi H., **Won J.,** Mahadevan-Jansen A., and Boppart S.A., "Differentiation of otitis media-causing bacteria and biofilms via Raman spectroscopy and optical coherence tomography", *Frontiers in Cellular and Infection Microbiology*, **12**, 869761 (2022). [link]
12. Monroy G.L.*, Fitzgerald S.T.*, Locke A., **Won J.,** Spillman D.R., Ho A., Zaki F., Choi H., Chaney E.J., Werkhaven J.A., Mason K., Mahadevan-Jansen A., and Boppart S.A., "Multimodal handheld probe for characterizing otitis media – integrating Raman spectroscopy and optical coherence tomography", *Frontiers in Photonics*, **3**, 929574 (2022). [link]
13. Monroy G.L., **Won J.**, Shi J., Spillman D.R., and Boppart S.A., "Automated classification of otitis media with OCT: Augmenting pediatric image dataset with gold-standard animal model data", *Biomedical Optics Express*, **13**(6), 3601-3614 (2022). [link]
14. Deng Y-H., Ricciardulli T., **Won J.,** Boppart S.A., Flaherty D.W., Kong H., "Self-locomotive, antimicrobial microrobot (SLAM) swarm for enhanced biofilm elimination", *Biomaterials*, **287**, 121610 (2022). [link]
15. Choi H., Zaki F., Monroy G.L., **Won J.,** and Boppart S.A., "Imaging and characterization

of transitions in biofilm morphology via anomalous diffusion following environmental perturbation", *Biomedical Optics Express*, **13**(3), 1654-1670 (2022). [link]

16. Sun P.P.*, **Won J.*,** Choo-Kang G.*, Li S., Chen W., Monroy G.L., Chaney E., Boppart S.A., Eden J.G., and Nguyen T.H., "Inactivation and sensitization of *Pseudomonas aeruginosa* by microplasma jet array for treating otitis media", *npj Biofilms and Microbiomes*, **7**(48), 1 (2021). **NIH/NIBIB Science Highlight.** [link]
17. **Won J.,** Monroy G.L., Dsouza R.I., Spillman D.R., McJunkin J., Porter R.G., Shi J., Aksamitiene E., Sherwood M., Stiger L., and Boppart S.A., "Handheld briefcase optical coherence tomography with real-time machine learning classifier for diagnosing middle ear infections [Invited]", *Biosensors*, **11**(5), 143 (2021). **NIH/NIBIB Science Highlight.** [link]
18. **Won J.*,** Hong W.*, Khampang P., Spillman D.R., Marshall S., Yan K., Porter R.G., Novak M.A., Kerschner J.E., and Boppart S.A., "Longitudinal optical coherence tomography of the antibiotic treatment response in otitis media", *Scientific Reports*, **11,** 5176 (2021). [link]
19. **Won J.*,** Huang P-C.*, Spillman D.R., Chaney E., Adam R., Klukowska M., Barkalifa R., and Boppart S.A., "Handheld optical coherence tomography for clinical assessment of dental plaque and gingiva", *Journal of Biomedical Optics*, **25**(11), 116011 (2020). [link]
20. Huang C., Sun P.P., **Won J.,** Wang Y., Boppart S.A., and Nguyen T.H., "Effect of non-phosphorus corrosion inhibitors on biofilm pore structure and mechanical properties", *Environmental Science & Technology*, **54**(22), 14716-14724 (2020). [link]
21. **Won J.,** Porter R.G., Novak M.A., Youakim J., Sum A., Barkalifa R., Aksamitiene E., Zhang A., Nolan R., Shelton R., and Boppart S.A., "*In vivo* dynamic characterization of the human tympanic membrane using pneumatic optical coherence tomography", *Journal of Biophotonics*, **13**(11), e202070033 (2020). **Featured on cover page**. [link]
22. **Won J.,** Huang P-C., and Boppart S.A. "Phase-based Eulerian motion magnification reveals eardrum mobility from pneumatic otoscopy without sealing of the ear canal [Invited]", *Journal of Physics: Photonics*, **2**, 034004 (2020). [link]
23. **Won J.,** Monroy G.L., Huang P-C., Hill M.C., Novak M.A., Porter R.G., Spillman D.R., Chaney E., Barkalifa R., and Boppart S.A. "Assessing effect of middle ear effusions on wideband acoustic immittance using optical coherence tomography", *Ear and Hearing*, **41**(4), 811-824 (2020). [link]
24. Monroy G.L., **Won J.,** Dsouza R.I., Pande P., Hill M.C., Porter R.G., Novak M.A., Spillman D.R., and Boppart S.A. "Automated classification platform for the identification of otitis media using optical coherence tomography", *npj Digital Medicine*, **2**(22), 1-11 (2019). [link]
25. Dsouza R.I., **Won J.,** Monroy G.L., Spillman D.R., and Boppart S.A. "Economical and compact briefcase spectral domain optical coherence tomography system for primary care and point-of-care applications", *Journal of Biomedical Optics*, **23**(9), 096003 (2018). [link]
26. Dsouza R.I., **Won J.,** Monroy G.L., Hill M.C., Porter R.G., Novak M.A., and Boppart S.A. "*In vivo* detection of nanometer-scale structural changes of the human tympanic membrane using nano-sensitive optical coherence tomography", *Scientific Reports*, **8**, 8777 (2018). [link]
27. **Won J.,** Monroy G.L., Huang P-C., Dsouza R.I., Hill M.C., Novak M.A., Porter R.G., Chaney E., Barkalifa R., and Boppart S.A. "Pneumatic low-coherence interferometry otoscope to quantify tympanic membrane mobility and middle ear pressure", *Biomedical*

Optics Express, **9**(2), 397-409 (2018). **Editor's Pick.** [link]

28. Monroy G.L., **Won J.,** Spillman D.R., Dsouza R.I., and Boppart S.A. "Clinical translation of handheld optical coherence tomography: Practical considerations and recent advancements", *Journal of Biomedical Optics*, **22**(12), 121715 (2017). [link]
29. Tankam P.*, **Won J.*,** Canavesi C., Cox I. and Rolland J.P. "Optical assessment of soft contact lens edge-thickness", *Optometry and Vision Science*, **93**(8), 987-996 (2016). [link]
30. Duma V.F., Tankam P., Huang J., **Won J.** and Rolland J.P. "Optimization of galvanometer scanning for optical coherence tomography", *Applied Optics*, **54**(17), 5495-5507 (2015). [link]
31. Tankam P., He Z., Chu Y.J., **Won J.,** Canavesi C., Lepine T., Hindman H., Topham D., Gain P., Thuret G. and Rolland J.P. "Assessing microstructures of the cornea with Gabor-domain optical coherence microscopy: pathway for corneal physiology and diseases", *Optics Letters*, **40**(6), 1113-1116 (2015). [link]
32. Tankam P., Santhanam A.P., Lee K.S., **Won J.,** Canavesi C. and Rolland J.P. "Parallelized multi-graphics processing unit framework for high-speed Gabor-domain optical coherence microscopy", *Journal of Biomedical Optics*, **19**(7), 071410 (2014). [link]

In Preparation

33. **Won J.,** Spaide R., Hwang Y., Takahashi H., Iida T., Akiba M., Ohno-Matsui K., and Fujimoto J.G., "Compensating retinal contour distortion artifacts in widefield OCT"
34. Hwang Y., **Won J.,** Chen S., Moult E.M., Ploner S.B., and Fujimoto J.G., "Application of optimally oriented flux on OCTA for 3D retinal vasculature characterization"
35. Woo K.M., **Won J.,** Ploner S., Kaiser S.M., Abu-Qamar O., Takahashi H., Hwang Y., Zhao P.Y., Witkin A., Maier A., Fujimoto J.G., Waheed N.K., "High resolution SD-OCT detects early interdigitation zone alterations in diabetic eyes without retinopathy"

Refereed Proceedings Articles

1. Karbole W., Ploner S.B., **Won J.,** Marmalidou A., Takahashi H., Waheed N., Fujimoto J.G., and Maier A., "3D deep learning-based boundary regression of an age-related retinal biomarker in high-resolution OCT", *BVM Workshop* (2024). [link]
2. Ploner S., **Won J.,** Schottenhamml J., Girgis J, Lam K, Waheed N, Fujimoto J.G., and Maier A., A spatiotemporal illumination model for 3D image fusion in optical coherence tomography, *IEEE International Symposium on Biomedical Imaging (ISBI) pp. 1-5*, (2023). [link]
3. Reimann M., **Won J.,** Takahashi H., Yaghy A., Lin J., Hwang Y., Ploner S., Chen S., Maier A., Waheed N., and Fujimoto J.G., "Unsupervised detection of small hyperreflective features in ultrahigh resolution OCT", *BVM Workshop*, 232-237 (2023). [link]
4. Ploner S., Chen S., **Won J.,** Husvogt L., Breininger K., Schottenhamml J., Fujimoto J.G., and Maier A., A spatiotemporal model for precise and efficient fully-automatic 3D motion correction in OCT, *The Medical Image Computing and Computer Assisted Intervention Society (MICCAI)* (2022), Part II, 517-527. [link]

Conference Presentations

At UB (*graduate student, +undergraduate student, #corresponding author)

1. Oh H.[+], Pinzel R.[+], Periyasamy S.A.[*], and **Won J.**[#], Design and development of optical coherence tomography probe for retina and ear imaging, Biomedical Engineering Society (BMES) Annual Meeting, Baltimore, MD, October 24, 2024.

Prior to UB

1. Ploner S., **Won J.,** Babiker F., Hwang Y., Schottenhamml J., Waheed N, Fujimoto J., Maier A., Quantification and compensation of 2nd order image distortions in high resolution OCT volume fusion and longitudinal registration, *Association for Research in Vision and Ophthalmology (ARVO) – Imaging in the Eye* (2025).
2. Woo K.M., **Won J.,** Ploner S., Kaiser S.M., Abu-Qamar O., Takahashi H., Hwang Y., Zhao P.Y., Witkin A., Maier A., Fujimoto J.G., Waheed N.K., High resolution SD-OCT detects early interdigitation zone alterations in diabetic eyes without retinopathy, *ARVO* (2025).
3. Hwang Y, Jamil M.U., Kaiser S.M., Raza K., Babiker F., **Won J.,** Fujimoto J.G., Waheed N.K., and Zhao P.Y., Hyper-reflective Macular Ring in Retinitis Pigmentosa Observed with Ultrahigh Resolution OCT, *ARVO* (2025).
4. Babiker F., Hwang Y., Yaghy A., Takahashi H., Jamil M.U., Kaiser S.M., **Won J.**, Tieger M.**,** Zhao P.Y., Reichel E., Witkin A., Fujimoto J.G., Waheed N.K., Capillary Blood Flow Speed as a Predictor of Anti-VEGF Response in Patients with Diabetic Macular Edema Quantified by VISTA OCTA, *ARVO* (2025).
5. **Won J.**, Karbole W., Marmalidou A., Ploner S., Takahashi H., Yaghy A., Hwang Y., Lin J., Maier A., Waheed N.K., Curcio C.A., and Fujimoto J.G., High-resolution OCT measurement of the sub-retinal pigment epithelium space in normal aging and age-related macular degeneration, *Gordon Research Conferences: Image Science* (2024).
6. **Won J.**, Karbole W., Marmalidou A., Ploner S., Takahashi H., Yaghy A., Hwang Y., Lin J., Maier A., Waheed N.K., Curcio C.A., and Fujimoto J.G., Topographic assessment of sub-retinal pigment epithelium deposits in normal aging and age-related macular degeneration using volumetric high-resolution OCT, *Association for Research in Vision and Ophthalmology (ARVO) Imaging in the Eye* (2024).
7. Ploner S., **Won J.**, Schottenhamml J., Takahashi H., Yaghy A., Waheed N.K., Fujimoto J.G., and Maier A., An advanced, automatic volume fusion pipeline enables subband quantifications and 3D hyperreflective foci analysis in high-resolution OCT, *ARVO* (2024).
8. Kaiser S., **Won J.,** Yaghy A., Jamil M.U., Marmalidou A., Takahashi H., Hwang Y., Fujimoto J.G., and Waheed N.K., Longitudinal visualization of subretinal drusenoid deposits in intermediate dry age-related macular degeneration with ultra-high resolution optical coherence tomography, *ARVO* (2024).
9. Jamil M.U., **Won J.,** Ploner S., Marmalidou A., Kaiser S., Takahashi H., Maier A., Fujimoto J.G., Waheed N.K., Age-related variations in the sub-band between outer retinal bands 1 and 2 in the macula, *ARVO* (2024).
10. Hwang Y., **Won J.,** Takahashi H., Yaghy A., Waheed N.K., and Fujimoto J.G., Inter-plexus connection visualization and graph representation of retinal vasculature using

Optimally Oriented Flux OCTA, *International professional society for optics and photonics technology (SPIE) Photonics West* (2024).

11. **Won J.,** Yaghy A., Ploner S., Takahashi H., Reimann M., Girgis J.M., Lam K., Hwang Y., Chen S., Meier A., Waheed N., and Fujimoto J.G., Motion correction and volume merging of ultrahigh resolution OCT enable 3D visualization and longitudinal tracking of hyperreflective foci, *ARVO Imaging in the Eye Conference* (2023).
12. Hwang Y., **Won J.**, Chen S., Yaghy A., Girgis J.M., Lam K., Waheed N.K., and Fujimoto J.G., Retinal blood flow speed quantification at the capillary level using a temporal autocorrelation model: Variable Interscan Time Analysis (VISTA), *ARVO Imaging in the Eye Conference* (2023).
13. Ploner S., **Won J.,** Schottenhamml J., Girgis J, Lam K, Waheed N, Fujimoto J.G., and Maier A., Advanced volume rebuilding overcomes quilting, stretching, and banding image artifacts in orthogonally scanned OCT, *ARVO* (2023).
14. Hwang Y., **Won J.**, Chen S., Yaghy A., Girgis J.M., Lam K., Waheed N.K., and Fujimoto J.G., 600 kHz A-scan rate enables OCTA-based retinal blood flow speeds quantification at capillary segment level using variable interscan time analysis (VISTA), *SPIE Photonics West,* Paper 12367-21 (2023).
15. **Won J.,** Reimann M., Takahashi H., Lin J., Yaghy A., Girgis J.M., Lam K., Hwang Y., Chen S., Waheed N., and Fujimoto J.G., Automated detection and visualization of small hyperreflective specks/flecks in nonneovascular age-related macular degeneration using ultrahigh resolution optical coherence tomography, *FLORETINA International Congress on OCT and OCT angiography in Rome* (2022).
16. Monroy G.L., Fitzgerald S.T., Locke A., **Won J.**, Spillman D.R., Ho A., Zaki F.R., Choi H., Chaney E.J., Werkhaven J.A., Mason K.M., Mahadevan-Jansen A., and Boppart S.A., Integrated Raman spectroscopy and optical coherence system for characterizing otitis media, *SPIE Photonics West,* Paper 12354-3 (2023).
17. Monroy G.L., Kim J., Ho A., Mironov A., Zaki F.R., Spillman D.R., Choo-Kang G., **Won J.**, Sun P.P., Aksamitiene E., Marjanovic M., Chaney E.J., Nguyen T.H., Eden J.G., and Boppart S.A., Microplasma exposure as a novel therapeutic treatment for otitis media demonstrated in a pre-clinical chinchilla model, *SPIE Photonics West,* Paper 12358-14 (2023).
18. Zaki F.R., Locke A., Sudhir K., Monroy G.L., Fitzgerald S., Choi H., **Won J.,** Mahadevan-Jansen A., and Boppart S.A., Non-invasive detection and characterization of otitis media causing bacteria and bacterial biofilms through Raman spectroscopy and OCT, *SPIE Photonics West,* PC1193502 (2022).
19. Choi H., Zaki F., Monroy G.L., **Won J.,** and Boppart S.A., "Anomalous Doppler shift induced by dynamic light scattering of biofilm morphology transition", *SPIE Photonics West,* PC1195905 (2022).
20. Deng Y-H., Ricciardulli T., **Won J.**, Boppart S.A., Flaherty D.W., and Kong H., Self-locomotive antimicrobial microparticles for enhanced biofilm removal, *American Institute of Chemical Engineers (AIChE) Annual Meeting* (2021).
21. Zaki F. R., Sudhir K., **Won J.**, Monroy G. L., Choi H., Chaney E. J., Spillman D.R., and Boppart S.A., 3D OCT characterization and quantification of refractive indices of bacteria and biofilms with antibiotic interventions, *Optical Society of America (OSA) Biophotonics Congress: Optics in the Life Sciences* (2021).

22. Choi H., Zaki F. R., **Won J.**, Monroy G. L., and Boppart S.A., Phase-sensitive characterization of dynamics in biofilms in response to chemical cues, *OSA Biophotonics Congress: Optics in the Life Sciences* (2021).
23. Monroy G. L., **Won J.**, Spillman D.R., and Boppart S.A., Automated classification of otitis media in pediatric OCT images: Augmenting with gold-standard animal model data, *OSA Biophotonics Congress: Optics in the Life Sciences* (2021).
24. **Won J.,** Sun P.P., Choo-Kang G., Li S., Chen W., Monroy G.L., Chaney E.J., Eden J.G., Nguyen T.H., and Boppart S.A., Disinfection and sensitization of middle ear infection related bacteria and biofilm by microplasma jet array, *SPIE Photonics West,* paper 11626-17 (2021).
25. **Won J.,** Monroy G.L., Barkalifa R., Porter R.G., Novak M.A., Spillman D.R., Aksamitiene E., Chaney E.J., and Boppart S.A., *In vivo* optical characterization of middle ear effusions associated with otitis media, *SPIE Photonics West,* paper 11627-7 (2021).
26. **Won J.,** Hong W., Khampang P., Spillman D.R., Marshall S., Yan K., Porter R.G., Novak M.A., Kerschner J.E., and Boppart S.A., Longitudinal OCT tracking of antibiotic treatment response on experimentally induced otitis media, *SPIE Photonics West*, paper 11627-6 (2021).
27. Huang C., Sun P.P., **Won J.**, Wang Y., Boppart S.A., Nguyen T.H., Effect of non-phosphorus corrosion inhibitors on biofilm pore structure and mechanical properties, *The International Water Association (IWA) Biofilms Conference: Emerging Trends and Developments* (2020).
28. Huang C., Cai J, **Won J.,** Zaki F.R., Boppart S.A., and Nguyen T.H., The effects of corrosion inhibitors on drinking water biofilms and its reactivity with free chlorine and monochloramine, *Water Quality and Technology Conference,* accepted but cancelled due to COVID-19 (2020).
29. Sun P.P., **Won J.,** Choo-Kang G., Li S., Chen W., Song X., Boppart S.A., Nguyen T.H., and Eden J.G., Plasma otoscope: *Ex vivo* study of disinfection rat eardrum by microplasma jet array, *International Conference on Plasma Science* (2020).
30. **Won J.,** Monroy G., Barkalifa R., Aksamitiene E., Porter R.G., Novak M.A., Spillman D.R., Chaney E.J., and Boppart S.A., *In vivo* characterization of middle ear effusions associated with ear infections, *Gordon Research Conference: Optics and Photonics in Medicine and Biology*, accepted but cancelled due to COVID-19 (2020).
31. Zhang C., **Won J.,** and Boppart S.A., Rapid detection of antibiotic resistant bacteria at the single cell level using two-photon excitation fluorescence and coherent anti-Stokes Raman scattering microscopy, *SPIE Photonics West, Proc. SPIE 11223*, 112230B (2020).
32. Huang C., Sun P.P., Monroy G., **Won J.**, Boppart S.A., and Nguyen T.H., Effect of corrosion inhibitors on mechanical and structural properties of simulated drinking water biofilms, *Water Quality and Technology Conference* (2019).
33. **Won J.**, Monroy G.L., Huang P-C., Spillman D.R., Barkalifa R., Chaney E.J., Hill M.C., Novak M.A., Porter R.G., and Boppart S.A., Non-invasive, cross-sectional optical middle ear imaging compared with acoustic measurements during otitis media, *International Symposium on Recent Advances in Otitis Media (ISOM)* (2019).
34. Sun P.P., **Won J.**, Choo-Kang G., Chen W., Boppart S.A., Nguyen T.H., and Eden J. G., Disinfection and sensitization of ear infection related bacterial biofilms by microplasma jet array, *Institute of Electrical and Electronics Engineers (IEEE) Pulsed Power and Plasma Science* (2019).

35. **Won J.**, Monroy G.L., Dsouza R.I., Porter R.G., Novak M.A., Hill M.C., Chaney E., Barkalifa R., Zhang A., Nolan R., Shelton R., and Boppart S.A., Quantitative assessment of tympanic membrane mobility during otitis media using pneumatic OCT, *SPIE Photonics West* (2019).
36. Dsouza R.I., **Won J.**, Monroy G.L., Spillman Jr. D.R., and Boppart S.A., Compact low-cost briefcase OCT system with automated classification for point-of-care diagnosis of otitis media, *SPIE Photonics West*, Proc. SPIE 10869, 10869-08 (2019).
37. **Won J.**, Monroy G.L., Huang P-C., Hill M.C., Novak M.A., Porter R.G., Chaney E., Barkalifa R., and Boppart S.A., Structural OCT middle ear imaging correlated with functional wideband acoustic immittance measurements, *Optical Society of America (OSA) Biophotonics Congress: Biomedical Optics*, CF4B.3 (2018).
38. Dsouza R.I., **Won J.**, Monroy G.L., Spillman Jr. D.R., and Boppart S.A., Briefcase sized low-cost, portable spectral domain low-coherence interferometry system for primary care applications, *SPIE Photonics West, Proc. SPIE* 10485, 10485-16 (2018).
39. **Won J.**, Monroy G.L., Huang P-C., Shelton R.L., Hill M.C., and Boppart S.A., Quantitative optical ranging pneumatic otoscopy, *American Academy of Otolaryngology-Head and Neck Surgery Foundation (AAO-NHSF) Annual Meeting* (2017).
40. Dsouza R.I., **Won J.**, Monroy G.L., Porter R.G., Novak M.A., Hill M.C., and Boppart S.A., Depth-resolved characterization of the *in vivo* tympanic membrane using nano-sensitive optical coherence tomography, *Conference on Lasers and Electro-Optics of OSA Tech. Digest*, SM3C.3 (2017).
41. **Won J.**, Monroy G.L., Huang P-C., Pande P., Shelton R.L., and Boppart S.A., Assessing pneumatic response of tympanic membrane *in vivo* using low coherence interferometry, *Biomedical Engineering Society (BMES) Midwest Regional Conference* (2016, poster).
42. **Won J.**, Monroy G.L., Pande P., Huang P-C., Shelton R.L., and Boppart S.A., Quantitative analysis of tympanic membrane mobility using pneumatic low coherence interferometry, *BMES Annual Meeting* (2016).
43. Duma V.F., Tankam P., Huang J., **Won J.**, Rolland J.P., Galvanometer scanning for optical coherence tomography, *Laser Science of OSA Tech. Digest*, JTh2A 129 (2016).
44. Tankam P., Huang J., Santhanam A.P., **Won J.,** Canavesi C., Rolland J.P., Development of cellular resolution Gabor-domain optical coherence microscopy for biomedical applications, *SPIE Photonics West, Proc. SPIE* 9330, 933004 (2015).
45. Duma V.F., Tankam P., Huang J., **Won J.**, Rolland J.P., Effective duty cycle of galvanometer-based scanners: impact on OCT imaging, *SPIE Photonics West, Proc. SPIE* 9315, 93150J (2015).
46. **Won J.**, Tankam P., Cox I., and Rolland J.P., Assessing Edge-Thickness of Soft Contact Lenses Using Gabor-Domain Optical Coherence Microscopy, presented at *BMES Annual Meeting* and *Frontiers in Optics of OSA* (2014).
47. Tankam P., **Won J.,** Santhanam A.P., He Z., Pataia G., Gain P., Thuret G., Lepine T., Hindman B.H., Rolland J.P., Investigating microstructures of human corneal endothelial cell microenvironment using high resolution imaging Gabor-domain optical coherence microscopy, the *Association for Research in Vision and Ophthalmology (ARVO)*, *IOVS* 55(5), 2071 (2014).

Invited Talks and Seminars

1. "Recent advances in ophthalmic OCT: ultrahigh-resolution and ultrahigh-speed", Biophotonics Summer School, part of NIH Center for Label-free Imaging and Multiscale Biophotonics (CLIMB), University of Illinois Urbana-Champaign, IL, June 5, 2025.
2. "Recent advances in ophthalmic OCT: ultrahigh-resolution and ultrahigh-speed", Department of Ophthalmology, Jacobs School of Medicine and Biomedical Sciences, University at Buffalo (UB), NY, October 17, 2024.
3. "Advancing translational optical imaging and analytical technologies: middle ear to retina", Department of Biomedical Engineering, University of Rochester, NY, February 20, 2024.
4. "Advancing translational optical imaging and analytical technologies: middle ear to retina", Department of Biomedical Engineering, University at Buffalo, NY, May 17, 2023.
5. "Advancing translational OCT to assess eardrum dynamics and middle ear infections", Virtual Biophotonics Conference, July 29, 2021.

GRADUATE STUDENTS

Dissertations/Theses Directed

M.S. degrees (project)

1. Anushaa Anbazhagan, BME M.S., Jan 2024 – May 2024, "Studying age-associated changes in outer retinal layer reflectivity using optical coherence tomography" (sole advisor)

Dissertations/Theses Progress

M.S. degrees (project)

2. Sivanandavijay Annamar Periyasamy, BME M.S., May 2024 – current, degree expected Aug 2025 (sole advisor)
3. Ramachandran Kulothungan, Computer Science M.S., Nov 2024 – current, degree expected Jan 2026 (sole research advisor)
4. Gouri Ramdas Menon, Engineering Science (Data Science) M.S., Jan 2025 – current, degree expected May 2025 (sole research advisor)

UNDERGRADUATE STUDENTS

* indicates students enrolled in BE 498 (Biomedical Engineering Senior Research)

1. Hyuna Oh*, BME B.S., May 2024 – current, applied to BME PhD programs
    - Performed full-time REU research during Summer 2024
2. Lauren D'Angelo*, BME B.S., Sept 2024 – current, BME B.S.+M.S. program
    - Will also do M.S. project research in my lab, M.S. degree expected May 2026

3. John Brubacker, Computational Physics B.S., Sept 2024 – current
4. Toast Lobel*, BME B.S., Nov 2024 – current
5. Aidan Langdon, BME B.S., Feb 2025 – current
6. Kien Dinh Vo, Computer Science B.S., Jan 2025 – current
7. Nick Cataldo, Computer Science B.S., Feb 2025 – current
8. Ryan Pinzel*, BME B.S., May 2024 – Aug 2024, BME B.S.+MBA program

PROFESSIONAL ACTIVITIES

Journal Reviewer

Biomedical Optics and Photonics

Journal of Biomedical Optics	2024 – current
Photonics	2024 – current
Applied Optics	2019 – current
Biomedical Optics Express	2019 – current

Ophthalmology

Experimental Eye Research	2024 – current
Translational Vision Science & Technology	2024 – current
Investigative Ophthalmology & Visual Science	2022 – current
Retina	2022 – current

Others

Diagnostics	2024 – current
Swiss NSF Grant Reviewer	2024

Membership in Professional Societies

Association for Research in Vision and Ophthalmology (ARVO), Member	2023 – current
International Society for Optics and Photonics Technology (SPIE), Member	2017 – current
Optica, previously Optical Society of America (OSA), Member	2014 – current
Biomedical Engineering Society (BMES), Member	2014 – current

SERVICE AND OUTREACH ACTIVITIES

University at Buffalo, Buffalo, New York

Led lab tour for high school students, WiSE STEM Outreach Campus Day	April 11, 2025
Volunteer, Westminster Community Charter School Visit	January 7, 2025
Poster judge, UB BME Poster Competition	November 8, 2024
Participated in UB STEM Research Opportunity Fair	October 29, 2024
Poster judge, UB Collegiate Science and Technology Entry Program (CSTEP)	July 25, 2024

University of Illinois Urbana-Champaign, Urbana, Illinois

Organizing Committee, Illinois Summer Research Symposium (ISRS) Summer 2018

Exhibitions for Outreach Programs and Summer Camps 2016 – 2019

- Girls Learning Electrical Engineering (GLEE) camp for 9th – 12th grade students
- Illinois Summer Academy (ISA) program for 9th – 12th grade students
- ResearcHStart Cancer Center program for 12th grade students
- Catalyzing Inclusive STEM Experience All Year Round (CISTEME365) program for teachers
- Annual Beckman Engineering Open House for the Urbana-Champaign community

TEACHING ACTIVITIES

University at Buffalo, Buffalo, New York

BE 304: Principles of Medical Imaging – Instructor (45 UG students) Spring 2025

Massachusetts Institute of Technology, Cambridge, Massachusetts

6.631: Optics and Photonics – created lab data-based HW assignments Fall 2022

University of Illinois Urbana-Champaign, Urbana, Illinois

BioE 120: Introduction to Bioengineering – Guest Lecturer Spring 2021

BioE 507: Advanced Bioinstrumentation – Guest Lecturer Spring 2019, 2020

ECE 467: Biophotonics –Teaching Assistant and Guest Lecturer Spring 2019

ECE 380: Biomedical Imaging –Teaching Assistant and Guest Lecturer Fall 2016, 2017

University of Rochester, Rochester, New York

BME 210: Bio-systems and Circuits – Teaching Assistant Spring 2014, 2015

BME 221: Biomedical Engineering Statistics – Teaching Assistant Spring 2015

BME 230: Signals, Systems and Imaging – Teaching Assistant Fall 2014

BME 201: Biomechanics – Teaching Assistant Fall 2014

MENTORING ACTIVITIES

University at Buffalo, Buffalo, New York

BME Faculty Academic Advisor Fall 2024 – current

BME Senior Design Supervisor Fall 2024 – current

BME Faculty mentor, Engineering Impact on Society (EAS 202) Spring 2024

University of Illinois Urbana-Champaign, Urbana, Illinois

Research Team Leader for NSF REU Frontiers in Biomedical Imaging Summer 2018

PATENTS

Eden J.G., Sun P.P., Chen W., Nguyen T.H., Monroy G.L., Won J., and Boppart S.A., Microplasma integrated array otoscope speculum and ear treatment methods, PCT/US2020/039250 (2020).

MEDIA COVERAGE

CTSI awards 12 new Translational Pilot Studies grants for 2025. January 2025. [link]

Inactivation and sensitization of *Pseudomonas aeruginosa* by microplasma jet array for treating otitis media. August 2021. **NIH/NIBIB Science Highlight.** [link] [media coverage 1] [media coverage 2] [media coverage 3] [media coverage 4].