

VANDERBILT BIOPHOTONICS CENTER VOL. I | ANNUAL EDITION



THIS YEAR IN NUMBERS

25

Publications Accepted

66

Conference Presentations

10 First Year
Graduate
Students Joined



2 Successful PhD Defenses



3 Students
Passed their
Qualifying Exams

NEW LAB SPACE FOR LOCKE LAB & BIOMIID

After 2 years of construction, the new home of the Locke Biosensing Laboratory and the BioMIID (Biomedical Microscopy, Immersion, Innovation, and Discovery) program opened on the 6th floor of the Engineering and Science Building (ESB) on the Vanderbilt University campus. This new 21,000 square foot space also hosts Dr. John Wilson's laboratory (Chemical and Biomolecular Engineering, Biomedical Engineering) and Dr. Jamey Young (Chemical and Biomolecular Engineering). Laboratory PIs worked with the building architects and VU facility management to custom-design lab spaces to fit the needs of their group. For BioMIID, this included custom rooms for home-built microscopes, a wet lab space, and a design space. For the Locke lab, this included spaces for cell culturing, chemical reactions, and a large optics room.

This space is in an ideal location for fostering collaboration between different departments on campus. ESB also houses many Biomedical Engineering laboratories on the 4th floor, the Wonder'y (maker space/innovation hub), the Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) facilities, and the Vanderbilt Center on Mechanobiology. ESB is also a 5-minute walk from Vanderbilt University Medical Center, enabling translational research in collaboration with faculty members at the Medical Center.

By: Anna Funderburg



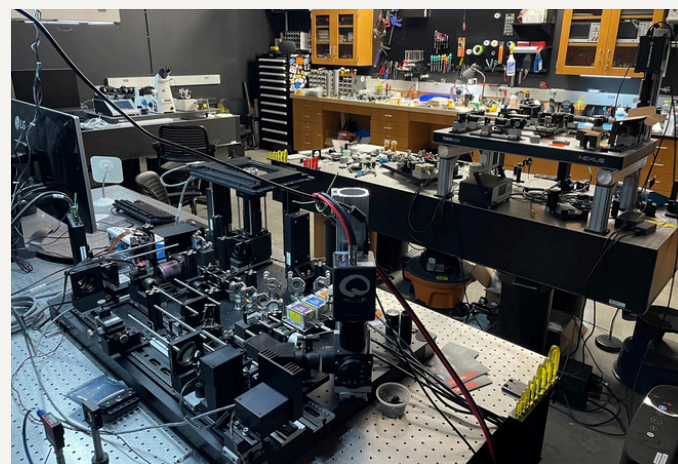
VBC faculty and staff overseeing construction of 6th floor laboratory spaces.



Chemistry workspace and student lab benches in the Locke laboratory.

VBC Summer Picnic

Thanks to everyone who joined us for the annual VBC Summer Picnic on June 7th!



BioMIID workspace with custom microscopy set-ups.

VU SPIE OUTREACH 2024-2025

SPIE* is the international professional society for the optics and photonics community, and Vanderbilt's student chapter has a history of being recognized for their outreach efforts. This past year, our student chapter sought to maintain this reputation by attending four events and teaching more than 500 students about the science of optics.

The chapter demonstration properties of light such as polarization and dispersion. Additionally the elementary schoolers learned how to build microscopes. They built microscopes using aluminum foil, cardboard, a clear plastic sheet, a jar, and a magnifying glass. They students even made their own objective lens by dropping water on to a cut off piece of the plastic sheet and learned the importance of water tension!

* For our non-optics readers, SPIE officially doesn't stand for anything. Historically though, it stood for Society of Photographic Instrumentation Engineers.



Homemade microscope constructed by the elementary students.



Microscope slide of large intestine (created with pink marker) viewed over the homemade stage.



Full microscope set-up with slide and illumination via a flashlight.



2nd year student George Grow demonstrates polarization by using poster tubes as linear polarizers



Students use a pocket microscope to look at microscope slides



1st year student Meagan McKee explains the process of diffraction using rainbow/diffraction glasses.

By: Parker Willmon

VU SPIE OFFICERS 2025-2026



President: George Grow
2nd year Mahadevan-Jansen
Lab

SPIE

STUDENT CHAPTER



Vice President: Joseph Afreh
2nd year Mahadevan-Jansen
Lab



Secretary: Meagan McKee
1st year Mahadevan-Jansen Lab



Outreach Coordinator:
Mayaank Pillai
1st year Bowden Lab



Treasurer: Luke Whitehead
1st year Locke Lab

The **VU SPIE Student Chapter** aims to connect students with diverse career development opportunities in optics and photonics. They provide access to sponsored activities, reduced conference fees, SPIE publications, travel grants, and the visiting lecture program to enhance student engagement and career growth.

“I've enjoyed getting involved with SPIE during my first year of grad school, and I am excited to build deeper relationships with chapter members and community partners now that I am transitioning into an officer position. We have had amazing opportunities to work with elementary and middle school students to build an interest in STEM and optics at a young age. I am thankful for the opportunity to share our interest in photonics with others, and I am excited to see what our chapter will accomplish this coming year!” - **Meagan McKee**

By: Alex Cousart

RECENT PUBLICATIONS, PRESENTATIONS, & AWARDS

Publications

- "[Wearable fNIRS platform for dense sampling and precision functional neuroimaging](#)"
 - Ali Rahimpour Jounghani, [Anupam Kumar](#), [Seth Crawford](#), [Audrey K. Bowden](#) & S. M. Hadi Hosseini
- "[Basis function model to extract the combined confocal and fall-off function from multiple optical coherence tomography A-scans](#)"
 - [Daniel J. Phan](#), [Audrey K. Bowden](#)
- "[Development and characterization of a combined fluorescence and spatial frequency domain imaging system for real-time dosimetry of photodynamic therapy](#)"
 - [Alec Walter](#), [E. Duco Jansen](#)

Presentations

The Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting

- "4D Imaging and volume quantification of subretinal injections using intraoperative OCT", [Alicia Repka](#)
- "Widefield retinal OCTA mosaicking and motion-corrected pediatric retinal OCTA with handheld spectrally encoded coherence tomography and reflectometry", [Jacob Watson](#)

Awards

- The 2025 BME Teaching Assistant Award was given to [Viannely Francisco](#) (Locke Lab).
- Dr. [Anita Mahadevan-Jansen](#) was awarded the Innovation Catalyst Fund by Vanderbilt University.



PAST EDITIONS

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ANNOUNCEMENTS

We are looking for new editors and guest editors! Please reach out to Alex at alexandria.cousart@vanderbilt.edu if interested.

Anna Funderburg will be defending her doctoral thesis on July 25th

&

Zeke Haugen will be defending his on July 29th !