Winston Nfor Kanjo ndi

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Undergrad researcher with experience in semiconductor fabrication from design to execution. Proficient in advanced processes including E-Beam, Photo, and Soft Lithography, PVD, PECVD, and Sputtering with direct experience fabricating optical Devices.

Education

Vanderbilt University — Nashville, TN

Bachelor of Engineering in Mechanical Engineering; Honors, Minor in Physics; GPA: 3.87 — *Aug 2023 – May 2027*

Experience

Research Intern — May 2025 – Aug 2025

NanOptics Lab, Vanderbilt University — *Nashville, TN*

- Developed a low-absorption(in the visible) Silicon-Rich Nitride (SRN) PECVD recipe to design and fabricate high-performance optical filters covering the visible and metasurfaces for advanced Optics.
- Conducted research project on geometry-driven structural color, producing a wide gamut of vivid, angle-independent colors from the engineered SRN metasurfaces.
- Co-led a summer STEM academy on optical devices for high school students.

Associate Tech Crew (Cleanroom Safety and maintenance Technician) — Aug 2024 – Present

Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) — *Nashville, TN*

- Promoted from Tech Crew Intern for demonstrating strong technical skills and leadership in the cleanroom.
- Automated a water chiller system for overheated machinery, leveraging sensor-driven controls to eliminate 6 hours of weekly manual labor and ensure consistent machine cooling.
- Improved surface deposition accuracy on the AJA Sputtering System with a novel sample-loading method.
- Developed and implemented training programs for new users on sophisticated lab equipment.
- Served as a lead safety technician during off-peak hours and weekends to ensure a secure Cleanroom environment.

Tech Crew Intern — May 2024 – Aug 2024

Vanderbilt Institute of Nanoscale Science and Engineering (VINSE) — *Nashville,TN*

- Spearheaded the optimization of PECVD film deposition processes for passivation layers, resulting in a 40% increase in charge storage capacity in capacitors using SiN as the dielectric.
- Developed a cost-efficient methodology that allowed a PECVD sample to be measured directly on a profilometer, eliminating a 3-4 hour lithography process previously required.
- Prepared and led over 15 lab sessions in VINSE's nanotechnology courses.

Projects

- **Best Project Award (VIX Hackathon)** for a *Brainwave-Controlled Interface* that visualizes real-time brain activity on a dynamic LED matrix as part of the SyBBure Searle Undergraduate Research Program (Fall 2024).
- **'Fastest Car' Award** in a class-wide competition for an *Electrically Powered Vehicle* designed and built using CAD, laser-cutting, and rapid prototyping for a Mechanical Design course (Fall 2024).

Conferences & Presentations

- **Oral Presentation** at the SyBBure Searle Undergraduate Research Symposium on *Geometry-Driven Structural Color on Engineered SRN Metasurfaces* (Aug 2025).
- **Best Poster Award** at the VINSE Undergraduate Summer Research Symposium for for excellence in presentation on *Optimization of PECVD Film Deposition for High-Capacity Capacitors* (Aug 2024).

Technical Skills

Fabrication Processes: E-Beam Lithography, Photolithography, Soft Lithography, Reactive-Ion Etching (RIE), Wet Etching, Liftoff, PECVD, PVD, Sputtering, SEM, Ellipsometry, Profilometry

Software & Tools: RCWA, Klayout, SolidWorks, AutoCAD

Languages: Python, MATLAB, C#, Octave

Extracurriculars

- Associate Director of Scholars' Experience, Urega Foundation
- Active Member, American Society of Mechanical Engineers (ASME) and Vandy Sports